



COAL AGE

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No. 17



For those who want to get ahead

Don't expect the whistle to wait until you get there.

Don't work by fits and starts. It takes as much steam to run the hoist at 5 p.m. as it does at 7 a.m.

Don't be afraid to do more than is expected of you. The engine that can take the biggest overload is the one that gets the most care.

Don't be undependable. The scrap heap is full of this kind of machinery.

Don't be dishonest. It doesn't pay—you may get caught and it's dirty work.

Don't start something you can't finish. Over-rated is a half-brother to incompetent.

Don't do your work with wet steam. Some other fellow with a steam trap in his makeup is sure to want your job---and get it.

Don't fail to take a vacation once a year. Nature abhors perpetual motion more than she does a vacuum.

Don't booze. It uses up your capital of health, money and brains without paying dividends.

Don't get stale. A competent man whose energy and enthusiasm keep the pop-off valve working is the kind of fellow wanted for the big jobs.

Don't waste your money. A dollar is a storage battery that required 100c. worth of your energy to charge.

Don't throw these don'ts away. Put the brake lever where you can reach it.

Written by P. L. Mathews,
General Superintendent, Santo Tomas Coal Co., Laredo, Tex.

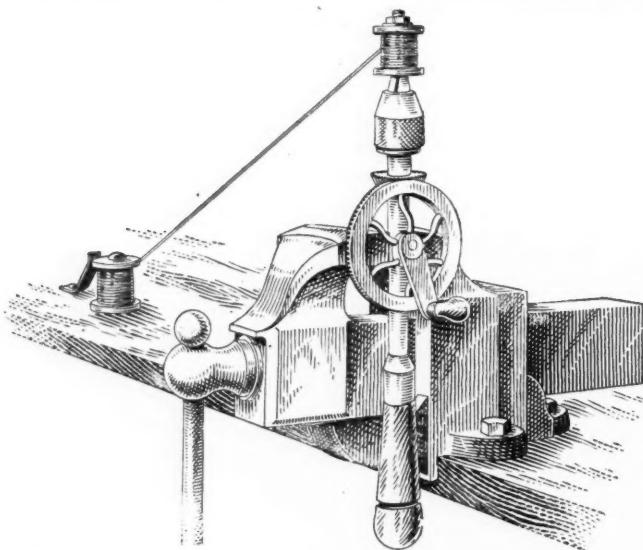
Ideas and Suggestions

[The many suggestions, mining kinks and wrinkles published in this department of *Coal Age* each week are of great practical value to all readers actually engaged in operating mines. From the 10,000 and more men the paper reaches each week there should come a much larger number of such ideas. There are clever arrangements of a simple and practical nature in use at all mines. What may be an old story to you is likely to be just the idea some other fellow is looking for. We particularly invite all *Coal Age* readers to send us ideas and suggestions for this department. Everything published is paid for at a liberal rate.—Editor.]



Handy Coil-Winding Kink

It is always a long and tedious job to wind a coil for a solenoid or electromagnet by hand, especially if the wire is very small. It is also difficult to make a good job of it by this method. Unless a lathe is at hand, the workman usually finds it difficult to conceive some mechanical means of turning the coil while winding. The illustration shows what has proved to be a very handy as well as a quick and satisfactory means of winding coils of small size. A hand drill is securely clamped in a vise, as shown. For holding the spool that the coil is to be wound on, a machine screw or small bolt is used that is long enough to fit in the drill chuck and



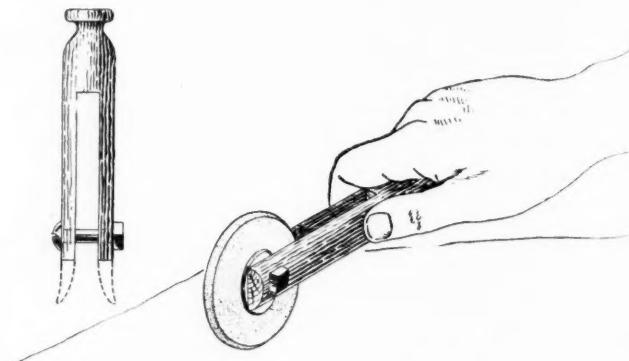
METHOD OF HOLDING HAND DRILL TO WIND A COIL

extend up through the coil. The head of the bolt is cut off and this end fitted securely into the drill chuck. The spool for the coil is set over the bolt and held down against the chuck by a washer and nut on the thread end of the bolt. The spool of wire from which the coil is to be wound is set over a heavy nail driven into the bench. The workman is now free to guide the wire on the coil with one hand, while he turns the drill with the other, and should be able to do a neat job.—W. W. Parker in *Power*.

An Erasing Kink

Every draftsman is familiar with the irksome labor involved in erasing ink lines on tracings. It is especially hard when using a circular eraser.

The illustration shows a kink that will help considerably to reduce the tiring effect on the fingers because of gripping the thin eraser and rubbing at the same time.



CIRCULAR-ERASER GRIPPING DEVICE

Take an ordinary wooden clothespin and after cutting away the flared portion at the end drill a hole large enough for a $\frac{1}{32}$ button-head screw through both lips of the pin. Insert the circular eraser in the slot of the pin, push the $\frac{1}{32}$ button-head screw through the pin and the eraser, screw on the nut and the eraser is ready for business.—Ernest A. Andrews, Jr., in *American Machinist*.



Safety First

We are all interested in safety first and everything pertaining to it. It is not a question, therefore, at present, of introducing safety first, but of enlarging on it and of explaining methods covering it. No matter how small a coal plant may be, it should have a safety-first committee. Safety-first inspections should be made from time to time by the workmen chosen as a committee. Then a report should be made in writing and submitted to the superintendent.

Employees must be taught safety; they must be taught to be careful in their own interests and in the interest of others. And this constant teaching should be provided by a properly constituted safety committee which should take an interest in its work.

When such a committee is organized for the promotion of safety, its members should talk safety to employees on every occasion. To assist all in the work, safety bulletin boards should be erected in conspicuous places about the works. All accidents should be posted here, diagrams should show how the accident happened and suggestions should be made showing how to prevent similar accidents.

Do not hire men who are careless. Make all new workmen understand that the company wants safety first. If any miner is found to be practicing unsafe methods, the company officials should take time to show him that he is wrong and where he is liable to be injured, and thus maybe an accident may be prevented.



How To Cut Wire Rope

When a rope is to be cut, great care should be taken to securely and properly serve or bind the rope on each side of the place to be cut, so as to prevent one strand from working back and, therefore, not receiving its share of the stress. This condition causes what is known as "high strand."

After the rope has been served as mentioned, place the cable over a length of old railroad rail or a piece of steel—then cut by means of a cold chisel with handle, and a sledge hammer.

If it is necessary to cut rope frequently, it is advisable to secure a special cutter for the purpose.

The same care in binding the rope should also be taken when attaching a socket.—*Leschen's Hercules*.



Repairing Steel Mine Ties

By C. W. STAFFORD*

The company for which I work makes extensive use of steel mine ties for room tracks. These ties are quite a serious item of expense, and it has been found justifiable to spend considerable time and money in order to repair broken ties rather than buy new ones. The particular form of tie which is in most extensive use and gets out of commission the easiest is that with the lugs punched from the body of the tie.

When a car is wrecked and dragged along the track, the flange of the wheel mashes these lugs down flat. When the trackman attempts to straighten them again, they usually break off and render an otherwise good tie useless.

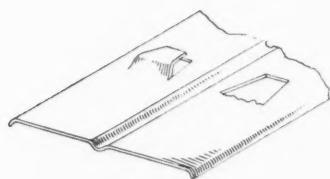


FIG. 1

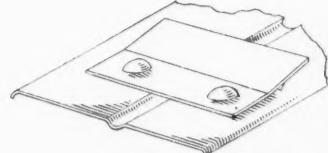


FIG. 2

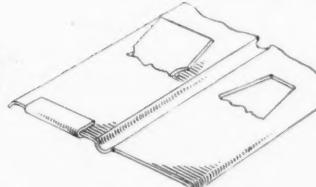


FIG. 3

FIGS. 1 TO 3. SHOWING STEEL TIE AND ITS REPAIR

These broken ties are gathered up and taken to the blacksmith shop to be repaired.

The usual method of repairing the ties is to rivet a piece of $\frac{1}{4}$ -in. iron on the end of the tie to take the place of the lugs, as shown in Figs. 1 and 2. To do this, the blacksmith must punch two holes in the end of the tie outside of the old lug holes. He must then cut a piece of iron about $3 \times 3 \times \frac{1}{4}$ in. and bend it so that it will admit the rail when in place. He must then mark and punch two holes in this piece to correspond to the holes in the tie and give the proper gage. The piece is then riveted on, and the tie is again ready for use.

*Stone, Ky.

The blacksmith at No. 5 mine has devised another way to repair the broken ties, which seems to be much better. He takes a piece of iron about $1\frac{1}{4} \times 1\frac{1}{4} \times 6$ in., necks it slightly, sticks the head of this piece up through the old lug hole in the tie, turns it flat so that the head cannot slip out, and bends the end round and over the end of the tie, with the result shown in Fig. 3.

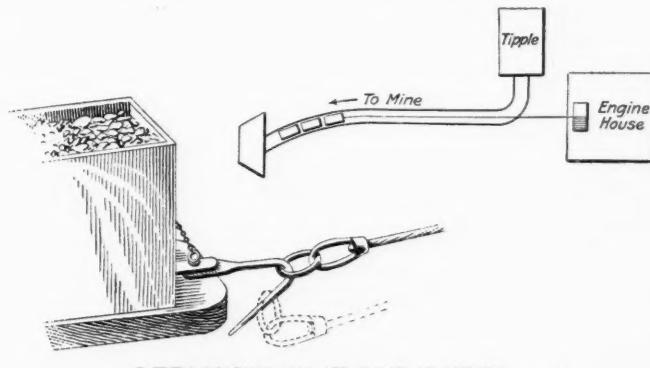
The amount of metal used in the new way is about one-third that required for the old, and the saving in time is even greater. It is only necessary to replace one of the old lugs in this manner, and the tie thus repaired is as good as new.



Cable-Detaching Hook

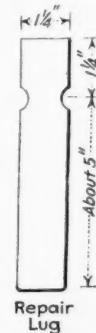
By R. Z. VIRGIN*

Sometimes a hook can be employed to cut off the haulage rope, especially where the hoisting engine is set at right angles to the tipple track, and where the rope passes under the track to the engine drum.



DETACHING HOOK FOR SLOPES

Such a hook is shown in the accompanying illustration. It is attached to the ear by means of the ordinary coupling pin. When the rope slackens after the cars pass the slope knuckle, the link on the end of the cable



Repair
Lug

readily slips off the hook, releasing the rope from the trip and allowing it to pass on into the tipple.

This idea, though not original, has been used profitably, eliminating some dangerous work. I therefore pass it along for the benefit of anyone who can make use of it.



British Coal Is Not a Factor in the Pacific Coast market. Two cargoes that arrived a couple of years ago are said to have been destined for the British Navy and were worked off by the Western Fuel Co. in its business. In former years, however, Scotch and Welsh coals used to arrive more plentifully at San Francisco. They were carried by vessels as ballast at that time, the vessels taking wheat or barley as return cargo.

*Wheeling Steel and Iron Co., Wheeling, W. Va.

Coal-Mine Fires

BY R. V. NORRIS*

SYNOPSIS—Mine fires are among the greatest hazards of coal production. Direct attack, smothering the affected section or the entire mine, surrounding, flushing, flooding and quenching with steam or inert gas are all means of coping with mine fires. Fighting fire underground, regardless of the means employed, is always an expensive and dangerous process. By far the cheapest and most satisfactory method of conquering mine fires is to prevent their starting.

Fires may well be classed as foremost among the dangers of coal mining. They involve not only great property loss, but an inherent danger to human life, far more serious than any monetary damage.

A discussion of mine fires may properly be divided into three heads—causes, prevention and treatment.

The most common cause of mine fires is the careless handling of lights. After this come sparks from inside locomotives, pipes, cigarettes and cigars. Electrical installations add their quota, and numerous fires are communicated to the workings from outside sources, through the outerops from hot ashes or burning refuse banks, and occasionally from forest or brush fires. Many fires start



FIGS. 1 AND 2. OIL AND ACETYLENE CAP LAMPS

from dust or gas explosions, or from the ignition of gas blowers, either by shots, or more frequently through carelessness. Spontaneous combustion is responsible for many fires in bituminous mines, particularly in abandoned and closed workings, but no authenticated case of spontaneous combustion has yet been noted in anthracite operations. A few fires have been directly traced to deliberate incendiarism, but this is, fortunately, exceedingly rare.

The open oil lights commonly in use in nongaseous mines are probably responsible for more than a majority of all coal-mine fires. The ordinary cap lamp, Fig. 1, may be hung on a timber for a sufficient length of time to ignite the wood; and this lamp, which is fairly stable when full, often upsets from the weight of the wick when nearly empty, and may fire a board or bench. Several fires starting in underground engine and pump rooms have been traced to this cause. Further, the open wick frequently drops sparks that, in dry timbered places, are a source of grave danger.

*Consulting engineer, Wilkes-Barre, Penn.

But few of these dangers are incident to the use of the modern acetylene cap lamp, Fig. 2, and this may well be substituted for the dangerous and dirty oil lamp.

In heavily timbered workings and for the use of timbermen, any open light possesses elements of danger; and in such cases glass-protected lamps, or better still, electric lights, should be used exclusively.

Safety lamps and the modern electric storage-battery lamps carry practically no fire danger. The latter are being successfully substituted for the less efficient and more dangerous lights in many modern collieries, with the advantage not only of eliminating fire danger but of better illumination and hence greater safety to the workers.

Smoking of all sorts—pipe, cigar and cigarette—should be absolutely prohibited both inside and outside all collieries. This is an easy rule to make, but an exceedingly difficult one to enforce, and it is sometimes found advisable to permit smoking in certain specified places where the employees may congregate to eat their luncheons.

Fires from electrical installations are not common and can generally be guarded against by care in placing wires, insulators and apparatus. With properly installed plants the main dangers are from short-circuits due to accidents, particularly to falls of roof, interfering with the wiring. These can be minimized by frequent and competent inspections.

FIRES OFTEN START AT THE OUTCROP

Many serious fires have reached the workings through the outerops, particularly through falls, in several cases from burning refuse banks located over outerops, and in one case at least from the dumping of hot boiler ashes into an open cave hole. Refuse and ash deposits should therefore be so located as to render ignition of the coal bed from them impossible. Where this is impracticable, all cave holes and openings to outerops that will be under such banks should be completely filled with clay or gravel so as to make the communication of fire through them to the workings out of the question. Further, all timber and brush should be cleared from around such openings to a sufficient distance, to absolutely remove danger of forest or brush fires reaching the coal. Old timber should not be allowed in refuse banks.

Fires from explosions of gas or dust can only be prevented by guarding against such explosions by ample ventilation, safety explosives, removal or wetting of dust, stone dust barriers and the like, a discussion of which would be outside the limits of this article.

Feeders of gas are frequently ignited without resulting in serious damage, the principal danger from these being from neglect. Where such feeders exist, careful examination should be insisted on and no lighted feeder be permitted to remain when the miner quits for the day. Such feeders under loose coal in the chambers are particularly dangerous and likely to be overlooked. Furthermore, the fireboss' inspection should especially be directed against this danger. Ignited gas from feeders can, if attacked promptly, be usually readily beaten out; or, if the gas flow is considerable, blown out by the

concussion of a stick of explosive fired in the immediate vicinity.

The danger of fires from spontaneous combustion can be minimized by ample ventilation of abandoned areas. With some coals, however, these fires cannot be absolutely prevented, and the only resource is watchfulness to prevent their spreading.

In conjunction with the best precautions to avoid fires, of equal importance is the avoidance of ignitable material. All inside stations, offices, hospitals, barns (Fig. 3), engine and pump houses and the like should be constructed of fireproof materials, even to the point of using metal tables and seats. All waste, oil, etc., should be kept in closed cans and these cans placed in fireproof closets. No oil or greasy refuse should be permitted in or about the workings except in such receptacles.

In the case of inside barns the best practice is to keep hay and feed in fireproof rooms separate from the barn itself. This should be ventilated by a separate split of air direct from the intake to the return. Only sufficient hay for immediate necessities should be kept inside, and all such material should be brought into the mine in covered cars to avoid the danger of accidental ignition.

Old timber should not be left in the mines, and old timber packing or cogs should be replaced by rock. In one case a slope cogg'd on both sides of the track with

timber became a roaring furnace for its entire length of 900 ft. in less than 30 min. after a fire started at the bottom.

Once started, the spread of a mine fire is largely dependent on the conditions encountered. With dry and abundant timbering and a strong air current the spread may be exceedingly rapid, while in the coal itself a fire progresses very slowly. In solid coal the progress of a fire is almost negligible, being in many cases measured by inches per year.

It should be noted that fire will often spread in overlying or underlying strata—such as top bone or thin streaks of coal—more rapidly than in the workings themselves. Many instances are known where mine fires have worked in this way past carefully prepared and guarded barriers.

Where there is a considerable emission of gas, a fire may travel rapidly along the face of the coal, igniting timber in its progress. Under such conditions there is grave danger of an extensive mine fire from a small blaze, which under ordinary conditions could be readily extinguished.

The speed and direction of a mine fire is largely influenced by the quantity and direction of the air current, hence a fire in the main ventilating current is always potentially more dangerous than one where the flow of air is less rapid.

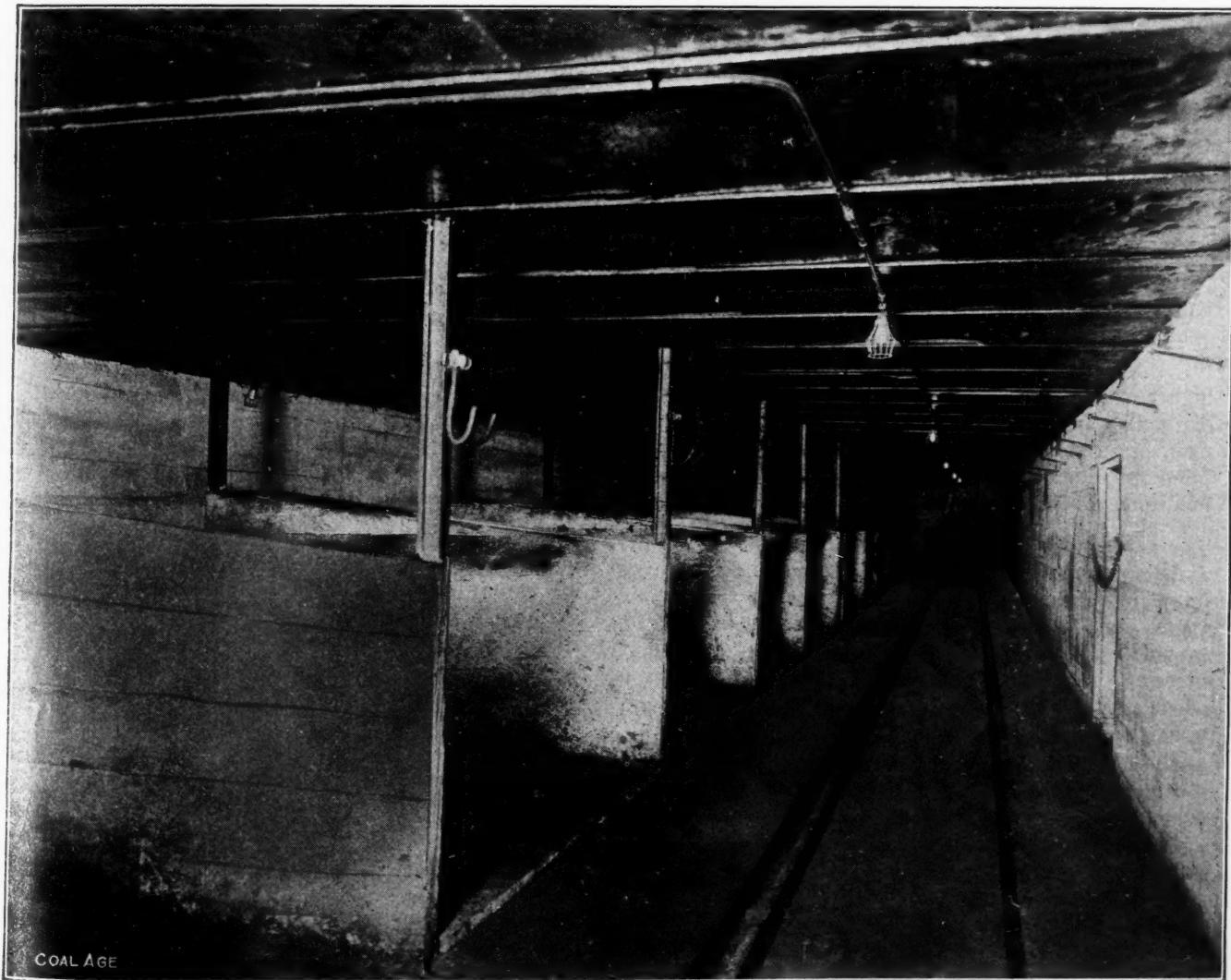


FIG. 3. MULE BARN, AUCHINCLOSS MINE, D. L. & W. SHAFT NO. 1

The methods of controlling and extinguishing mine fires may be divided into the following classes: First, direct attack; second, smothering entire mine; third, section smothering; fourth, surrounding; fifth, flushing; sixth, flooding; seventh, use of gas.

In preparation for possible fires collieries should be supplied with chemical extinguishers and with an ample allowance of extra charges. In large mines chemical fire engines mounted on mine car trucks are often provided. Water pipes are laid in the gangways with an ample hose supply. In laying out the water system in deep mines it must be so arranged as to avoid extreme pressures. Water taken from the surface into deep mines should pass through intermediate tanks to avoid undue head or that beyond the strength of the hose, and if taken directly from the mine pumps, the column may have to be drawn down or cut off by closing valves.

In mines provided with compressed-air pipes arrangements may be made to use these for water-supply in emergency, by proper valve connections with the pumps.

Further than this a considerable supply of pipe, usually 2-in., should be kept on hand exclusively for fire emergency, and this supply must be held inviolate for this purpose only.

In addition to the above many of the larger operators have one or more "fire cars" ready to be run to any mine in case of fire. The equipment of such cars should include chemical extinguishers, pipe, hose, nozzles, valves, tools, fireproof brattice cloth, helmets, lamps (both safety and electric), first-aid supplies, etc. Often a small fan complete with casing and engine or motor is added. Where such cars are provided, a crew of specially trained men should be available on short notice.

In all collieries, in conjunction with the usual first-aid and rescue corps, men should be trained as fire fighters, with frequent drills both inside and outside. Conferences between the officials and fire corps, with discussion of possible fires and problems for study, are well worth while.

Fans should be made reversible, but the actual reversing of the air current should only be undertaken after careful consideration and then only by direct order of the higher officials. The reversal of the air current may be distinctly dangerous in driving suffocating gases upon the men, but such reversal is often necessary in handling a mine fire, and arrangements of fans and workings to facilitate this are fully warranted.

ESCAPEWAYS SHOULD BE PLAINLY MARKED

All escape openings and routes should be fully marked by plain signs, and escape maps showing all available routes out from each section of the mine should be provided and kept up to date. This is particularly necessary in view of the possibility of the operating officials being caught inside and rescue work being undertaken by outsiders not familiar with the workings.

Most fires in their incipiency, particularly when not complicated by great emissions of explosive gases, are susceptible of extinguishment by direct attack.

When a fire is reported, the first duty of those in charge of the mine is to provide for the safety of the workers by getting out of the workings as rapidly as possible all employees not needed for fighting the fire. While this is being done the method of first attack should be decided on, and water pipes, extinguishers, helmets, lights, etc., provided. In actually attacking a fire the

first consideration must always be the safety of the men, and no method of procedure that may possibly result in trapping men in by fire should be permitted.

Safe retreat having been provided, the attack should first be directed to prevent any possible spread of the fire by wetting down or removing all readily combustible material around the fire area. When a fire is thus cut off, the fight is practically won, and what remains is to close in on the actual fire area, wetting down and removing the débris as the work progresses.

In many cases it is practicable to actually load out a fire without fully extinguishing it, and in steep pitching workings small fires in the chambers are treated by drawing the coal, including the fire itself, and sending the whole to the surface.

The air supply to the fire area should be carefully controlled. In this the fighters face two opposing conditions—a small supply is desirable to reduce the rapidity of spreading, and a large supply is necessary to dilute the gases for the comfort and safety of the men and to minimize the danger of explosions. A large force of men will usually work with the air, while a smaller one, often with helmets, will be required beyond the fire to prevent its spread.

DIRECT ATTACK IS OFTEN POSSIBLE

Direct attack is by no means confined to minor fires. In many cases quite extensive fires not susceptible of attack by other methods have been successfully extinguished by this means. At the Cameron Colliery, Shamokin, Penn., such a fire involved an area about 300 by 500 ft., and the fight was prosecuted continuously for about two months, in the face of great danger, before the fire was finally subdued. The method employed was working around the fire area until the fire was isolated.

On attacking a stubborn and inaccessible fire in the Hazleton Slope of the Lehigh Valley Coal Co., the late W. A. Lathrop used water in large rushes by constructing 50,000-gal. tanks at the head of the slope and suddenly allowing the entire contents of the tanks to rush down on the fire. The wave of water thus launched practically filled the slope cross-section and reached the fire, whereas the same quantity in small streams had failed. In another instance in fighting an extensive fire under bad roof, telescoping sheet-iron tubes were constructed and the men, protected by these from roof falls, gradually advanced by the use of hose streams.

Next to direct attack the most generally used method of fighting mine fires is smothering by cutting off the air supply and allowing the products of combustion to extinguish the fire.

In the case of extensive fires with a large flow of explosive gases it may be advisable to close the entire mine by sealing all openings. This can only be accomplished successfully where the coal has not been worked to the outerop so as to produce crop falls or breaches, and where the overlying strata are not so cracked as to allow air to reach the closed workings.

This method has the advantages of simplicity and freedom from serious danger in sealing, but the grave disadvantage of requiring considerable time for the gases to accumulate sufficiently to extinguish all fire, the probability of extensive spread during this accumulation, the practical impossibility of knowing anything of the progress of the fire until reopening is attempted, and

the complete loss of the use of the colliery while it is sealed off.

A serious fire preceded by an explosion was thus sealed off in the Warrior Run Colliery of the Lehigh Valley Coal Co. in 1906 (see *Engineering and Mining Journal*, Feb. 16, 1907, page 334). When finally reopened the workings were still so hot that the fire broke out again, but not so fiercely that it could not be conquered by direct attack. The mine was sealed from Aug. 10 to Sept. 22, when a gas analysis of samples drawn from the stoppings showed CO₂, 4 per cent.; CO, none; CH₄, 36.3 per cent.; O, 3.8 per cent. This did not properly represent the conditions in the fire zone, as the light CH₄ was undoubtedly higher in percentage at the stoppings than in the deep workings.

Another fire treated by general mine sealing occurred Dec. 9, 1901, at the Big Lick Colliery of the Summit Branch Mining Co., near Lykens, Penn. (*Engineering and Mining Journal*, Feb. 9, 1907). This fire started in a heavily timbered slope and was sealed Dec. 10 by stopping the mouth of the slope with a barrier of corrugated iron on old rails, banked outside with earth. The sealing was completed by hydraulicking surface

have not yet been driven through to the levels above and pitch workings opened only by rock tunnels from other beds.

This method of fighting mine fires presents dangers to the men erecting the stoppings—particularly when a considerable amount of explosive gas is present—as the stoppings are frequently blown out by explosions occurring during or immediately after their construction. Fig. 4 illustrates such a condition. Fire was found in the face of the slant A, not yet through to the airway, in a very gaseous section of the mine. The stoppings marked "first seal" were promptly erected and as promptly blown out, accompanied by a spread of the fire beyond their locations. Next stoppings marked "second seal" were built, these sharing the same fate as the first. Then the third stoppings marked "third seal," cutting off the entire area, in this case built of concrete, were blown out by a violent explosion. Through all these attempts the original ventilation was maintained, a single current passing in through No. 1 tunnel, circulating around the workings and out No. 3 slope airway.

As a final expedient the air was reversed, making No. 1 tunnel the return and splitting the air at the foot of No. 3 slope. The stoppings marked "fourth seal," at about the location of the second seal, were then built and successfully maintained, and the fire smothered within a week. In this case success appears to have been due to the maintenance of a sufficient supply of fresh air to dilute the gases evolved to below the explosive point during the construction of the final stoppings. The original current circulating first through the workings was already so charged as to make an explosive mixture with the gas given off in the fire area.

LOCAL CONDITIONS DETERMINE LOCATION OF STOPPINGS

The order of putting in stoppings on the intake and outlet sides of a fire is a matter of considerable dispute and must be finally settled by local conditions. In general it appears safer to put the first stopping on the inlet side, as this can be done in relatively pure air. When this is completed, it checks the flow of noxious gases in the return. The other argument is that if the first stopping is put in the return the fresh air reaching the fire tends to dilute the gases and reduce the danger of explosion. In any event the erection of the stoppings is attended with danger, particularly to the men working in the return, who may often require the protection of helmets to accomplish the work.

Stoppings are usually constructed of brattice cloth backed at once by barriers built of timber, often doubled and with clay or sand filling; and, in the case of serious fires, reinforced by brick or concrete walls built as soon as the stability of the temporary stoppings is reasonably secure.

In all cases pipes should be extended through the stoppings as far as possible toward the fire area, so that the character of the gases may be determined from time to time by analysis of samples. Pipes installed for water or compressed air have been satisfactorily used for this purpose. After analysis shows the gases to be of a composition certain not to support combustion, a length of time, depending upon the duration, extent and intensity of the fire, should be allowed to elapse before reopening, in order to prevent reignition.

Before entirely removing the stoppings, the fire area should be examined, as far as can safely be done, by

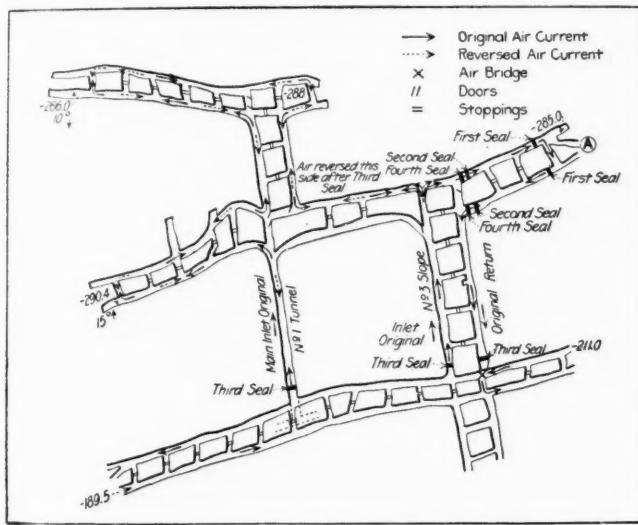


FIG. 4. LOCATION OF VARIOUS SEALS, ERECTED TO SMOOTHER A MINE FIRE

material into the extensive crop falls existing on both sides of the slope. Temperature and pressure observations were made on samples of air drawn from a pipe passing through the earth slope stopping, these showing a maximum temperature of 332 deg. F. and a maximum pressure of 1.3 in. water-gage. The fire was left sealed until Feb. 3, 1903, or 14 months 10 days, when the pressure became normal and the temperature of air from the test pipe was but 64 deg. F. The fire was found extinguished, the action of the gases being shown by the partly consumed timber. The rocks, however, were still so hot that special ventilation and a free use of water for cooling was necessary before reopening.

Where practicable, sectional smothering is quite generally resorted to, even in preference to direct attack. The conditions favorable to this method are a limited area of workings that can be stopped off without undue risk, and workings opened by two or more rock tunnels or by shafts through rock, while the unfavorable conditions are extensive or caved workings, with many connections to the surface or to other beds. Ideal conditions for this treatment are lower lifts of slopes in which the chambers

helmet men, and for this purpose removable panels of some sort should be provided in the more permanent stoppings.

An interesting pneumatic mattress for rapid sealing, consisting of a bag with stays like the tufts of a mattress, blown up by compressed air, either from the colliery pipes, or if necessary by a hand pump, is described by Carl Scholz in *Coal Age* of Feb. 17, 1912. Where the openings are sufficiently regular for its general use, such a device might well be provided.

In certain cases, particularly with fires in old worked over and caved territory, neither direct attack nor smothering is practicable. Such mine fires have sometimes been cut off by surrounding the affected area with incombustible filling, leaving the fire thus confined to burn itself out. This method of attack is extremely costly and not absolutely certain of success. In general it consists in opening a passage clear of combustible material around the fire area and filling this space with

As far as known, the fire, which was within 300 ft. of the barrier when it was building, has not gone through. The operators have, however, started a stripping operation to remove the surface and coal west of the barrier. This stripping has now made an open cut to the bottom rock of the bed beyond the barrier and effectively eliminated further danger to the main workings.

Another fire that was successfully surrounded, and that is presumably still burning, is in the Jersey Colliery of the Delaware, Lackawanna & Western Railroad Co. at Avondale, Penn. This was described by P. H. Devers in *Engineering and Mining Journal*, July 11, 1908, page 86. In this case openings were made in the bed on both sides of the fire from the outcrop to a fault that separated the affected workings from the balance of the colliery, and these openings flushed with surface soil.

The surrounding of a fire is always attended with considerable danger and is not an absolutely sure preventive of future spreading. Mine fires will extend not only in

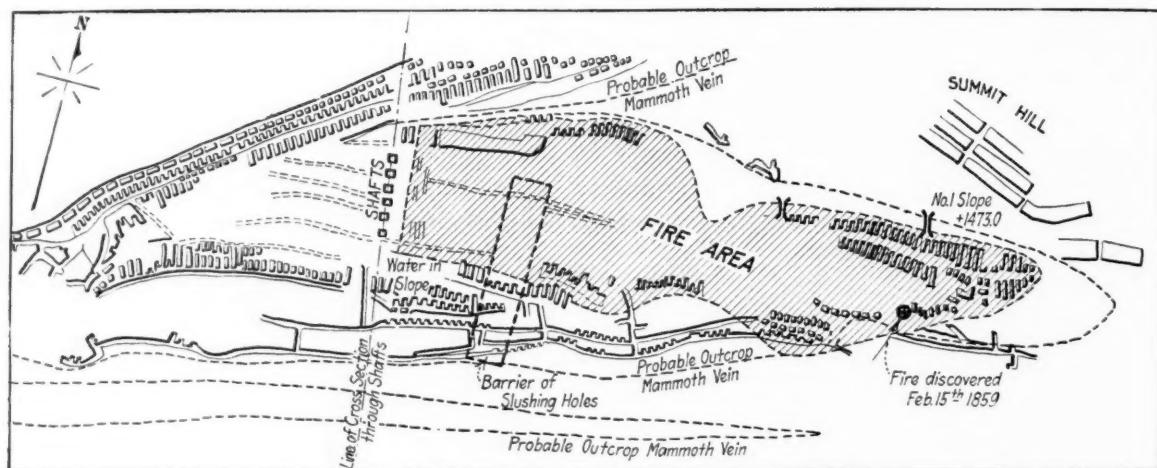


FIG. 5. PLAN OF SUMMIT HILL FIRE AREA

sand or gravel, usually sluiced or washed in through boreholes.

Among the notable fires that have been thus isolated is the Summit Hill fire, which started in 1859 in the Mammoth Bed workings of the Lehigh Coal and Navigation Co., where the bed was 60 ft. thick. This fire, despite great expense in attempts at extinguishing it, has burned for the past 57 years, gradually extending until it menaced the main workings of the company.

The ground over and in the vicinity of the fire is so cracked and broken that no smothering methods were possible, and even silting through boreholes on 50-ft. centers failed.

In this emergency a clay wall was constructed across the basin during 1909 and 1910. The method employed was the sinking of four shafts 50x12 ft., 50 ft. apart, replacing all timbering by concrete braces, filling the shafts with clay, then excavating between the shafts and filling the excavation in the same way (see Figs. 5 and 6), thus making a clay and concrete wall 555 ft. long, including the filled open cut at the end. The balance of the stopping consisted in replacing the coal bed, including the top slate, for a further distance of 260 ft., with clay put in through two additional shafts.

The whole barrier is said to have required about 100,000 cu.yd. of clay and to have cost in the vicinity of half a million dollars.

the coal bed itself but in the carbonaceous shales and streaks that are often found in the vicinity of the coal, and this method of control should only be adopted when other and more certain methods are inapplicable.

As a corollary to surrounding, the actual cutting off of a fire by open trenching around the affected area may sometimes be practicable. In general, however, such open cuts are not only prohibitive in cost, but their completion is so slow as to defeat their end by allowing the fire to pass the cutoff line.

In all cases of surrounding, inspection openings should be driven around the closed area beyond the fire barrier to preclude the possibility of the fire passing and getting a fresh start without the knowledge of those in charge.

With the success of the culm flushing now customary for support in anthracite mines has come the use of this method for controlling mine fires. Briefly, a flushed barrier is constructed around the fire at a safe distance by introducing culm and colliery refuse, either through pipes or boreholes, and the area thus cut off is filled by flushing in material, gradually reducing the area and perhaps ultimately extinguishing the fire.

This method is in some cases quite effective, but its success is rendered doubtful by the impossibility of completely filling the workings with material flushed in through boreholes and by the difficulty of reaching certain areas in a crushed territory by this means.

An important fire at the Hecksherville Colliery of the Philadelphia & Reading Coal and Iron Co., which extended for over a mile along the outerop, was successfully extinguished by this method. A number of slopes were driven down from the crop and culm flushed into the old workings through them. Then headings were driven in the top and bottom slate and all openings encountered were filled by flushing. Where severe fire was found by this exploration, holes were drilled from the surface and used for additional flushing. This method involves a large supply of flushing material and the disposal of water amounting to at least ten times this volume.

The flushing method was tried without success at the Summit Hill fire, also partly failing when tried for cutting off a fire in the old Sioux workings near Shamokin.

With ample supplies of flushing material and water this method deserves careful consideration, particularly for fires in old workings above water level.

FLOODING IS A SURE METHOD

Where workings are so located that they can be filled with water, flooding of the mine or section offers a sure method of extinguishing mine fires. The only precaution necessary is to avoid entrapping and compressing air in the workings, as fire will smolder for months in compressed air and break out again on unwatering. Such a case occurred in the Luke Fidler Colliery near Shamokin, Penn., when after being flooded by a 200-ft. head of water for more than two months a fire again broke out in the face of a pitching chamber that was extended in the solid for less than 50 ft. above the gangway.

The objection to flooding is the enforced idleness of the operation during flooding, unwatering and reopening, and the great cost not only of the actual operation, but of the extensive repairs made necessary by the falls of roof and crushing of timber incident to the presence of the water.

Where flooding is undertaken, holes should be bored to allow any entrapped air to escape. All openings to be used for unwatering should be made secure, and all loose timber and other floatable objects removed.

As a ton of coal in the solid occupies about 1 cu.yd. of space, and as besides the coal shipped allowance must be made for waste and refuse removed, from 1 $\frac{1}{4}$ to 1 $\frac{1}{2}$ cu.yd. of water may be required for each ton of coal that has been produced by an anthracite colliery, or 300 to 400 million gallons of water is necessary per million tons. Hence, in the case of complete flooding, the quantity of water put into an old and extensive mine may run up into billions of gallons.

For removing this vast quantity of water special arrangements are necessary, either in the form of extensive pumping plants arranged to follow the water down as it recedes or water hoists in shafts or slopes. (See *Transactions, A. I. M. E.*, Vol. XXXIII, page 106.)

By the use of suitable dams, considerable areas of workings may in many cases be exempted from the water even in the event of general flooding being required. It is often possible to flood minor areas, which may be cut off from the general workings. This may be accomplished by turning into such restricted areas the regular drainage of the mines, either by stopping the pumps or by directing their discharge into the affected area. For general flooding such large volumes of water are necessary that special arrangements for its supply are required,

such as turning large streams directly into the mines or installing temporary pumping plants of considerable capacity.

In unwatering accurate account should be kept of the performances of pumps and hoists by the use of revolution counters on pumps and hourly records of hoists. These, combined with regular measurements of the height of water, assure proper progress and indicate the extent of plant required. Furthermore, with these records assurance is had that the unwatering plant is working to capacity.

Where there is probability of unwatering by slope tanks, special care should be taken in the flooding, as

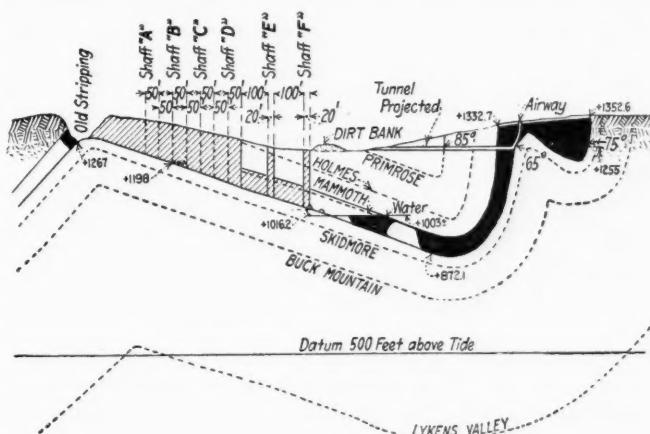


FIG. 6. CROSS-SECTION THROUGH BARRIER AT SUMMIT HILL

far as time permits, to leave such slopes free of débris and in condition to allow the passage of tanks. The greatest difficulty encountered in handling tanks in flooded slopes is from falls or débris under water, which block the proper descent of the tanks.

EXTENSIVE REPAIRS MUST BE EXPECTED

After unwatering a flooded mine, extensive reopening and repairs may be expected, particularly with strata containing fire clay in considerable quantities. In some instances such unwatering has been accompanied or followed by extensive squeezes, owing to the softening of fire-clay strata in or close to the coal beds.

The use of steam or carbon-dioxide gas has frequently been attempted in the handling of stubborn mine fires, occasionally with success. The procedure is costly and rather uncertain, and would seem to present no sufficient advantages over the smothering methods previously described to warrant its adoption.

In general each mine fire presents a problem of its own, and when the first attempts at extinguishment are unsuccessful, careful and thorough consideration should be given to decide on the best method of attack. Once this method is determined, the work should be prosecuted with all possible diligence and skill under the most competent supervision obtainable. Ample supplies must be furnished and kept on hand, and the constant presence or immediate availability of a competent physician insured. In the case of large working forces it may even be advisable to install a temporary hospital to treat men suffering from accidents or overcome by gases or smoke.

Finally, prevention is far more important and less costly than even the best methods of extinguishing fires.

How Mine Safety Is Increased by Compensation Laws*

By HERBERT M. WILSON†

The average number of men killed per thousand in coal mines has shown a rapid decrease from the date of the earliest mine inspection in 1869, when it was nearly 6 per 1,000, to less than 3 per 1,000 in the first five years of state inspection. Little change in the fatality rate was then evident for nearly 20 years, when an increase resulted from the large production per man and the intensive activities due to the introduction of mining machinery and electricity, coupled with deeper mining. As quickly as the causes of this accident increase were determined, remedies were applied, with the result that the fatality rate in coal mining has fallen rapidly from the second maximum reached in 1907 of 4.08 per 1,000 to 3.22 per 1,000 last year. In metal mining the rate has similarly fallen from 4.19 per 1,000 in 1911 to 3.54 per 1,000 in 1914.

That there is much yet to be done in the way of safeguarding the miner is evidenced from the most brief comparison of this accident rate with that of two European countries where intensive governmental and private attention has been given to safety in mining, but in which the natural hazards of mining, owing to depth of operation, treacherousness of roof, irregularity of coal formation and presence of explosive gas and dust, are even greater than in the average mine of the United States. Thus, in England the fatality rate per thousand is but a little over 1, and in Belgium a little less than 1. In other words, the fatality rate in the United States is still about three times as great as in the countries named, measured by the number of men employed, a condition that should encourage those of us concerned in safety engineering to believe that, with continued and renewed effort, we may yet hope to reduce the fatality ratio for the mines of the United States to one-third the present rate.

WELL-CHOOSEN INSURANCE PROVISIONS AID SAFETY

Lately, a new agency has given an increased impetus toward a further improvement of conditions. This has been the enactment in many mining states of workmen's compensation legislation, accompanied by excellent insurance provisions that, however, are such, unfortunately, as to produce the proper ameliorative effect in only two or three states.

Workmen's compensation legislation is a powerful instrument for greater safety in the industries, from the fact that special stress is not laid on how the accident occurred, but only upon how badly the employee is hurt by it. The injured person does not have to employ lawyers to prove his case, because the fact of his employment alone is a proof of his right to compensation. The immediate effect of such legislation is the certainty confronting the mine operator that he must pay out large sums for every accident, regardless of its cause, thus adding to the cost of production of his coal or ore.

This furnishes the strongest incentive to him to reduce the causes of accidents; not that the operator has ever

*Abstract of an address entitled "Workmen's Compensation Legislation and Its Effect on Safety in Mining," presented at the Mining Section, Fifth Annual Congress National Safety Council, Detroit, Mich., Oct. 18, 1916.

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lacked reasonable consideration for the welfare of his employees and a proper human interest in their safety, but because of his engrossment in earning his daily livelihood, he has not felt that he had the time to devote to safety of operation. This time he must now find because of the actual cash cost of injuring workmen.

Even these conditions, however, were found inadequate to bring about a material improvement, for the simple fact that mine operators have always been willing enough to improve safety conditions, if they only knew what further could be done within reason and the limits of their financial ability.

The requirement in the workmen's compensation laws of Pennsylvania and Kentucky, for example that the mine operator shall insure as a guarantee of his ability to meet his compensation obligations, has furnished the needed incentive, moral and financial, to the prompt and effective dissemination of a more general knowledge of the causes and means of preventing accidents, and of the cash value of and the cost of removal of, each mining hazard.

The insurance authorities have required that mines be inspected before they are insured, for the purpose of fixing a rate. This rate is carefully based on the various hazards in the property thus inspected, and the shortcomings of the operation are clearly made known.

The effect of this new element in the mine safety problem has been felt in some measure in all the coal-mining states in which there are compensation acts that encourage private insurance enterprise. These are the states of Illinois, Indiana, Iowa, Maryland, Kansas and Michigan. Under more favorable legislation, the effect is more promising for Colorado, and under still more recent and beneficial legislation, the effect has been most strongly felt in the states of Pennsylvania and Kentucky, while in California it has at last effected the establishment of a long-needed state mine-inspection department operating under modern regulations.

PENNSYLVANIA MINES 92 PER CENT. PERFECT

In Pennsylvania, where the law has been in effect only since Jan. 1, the mines insured by private companies have been inspected twice, and sometimes three or four times. The average condition of the bituminous coal mines in Pennsylvania on Jan. 1, 1916, was 75 per cent. perfect on the standard scale of measurements adopted. The average condition of the same mines on July 1, 1916, only six months later, was 92 per cent. perfect. This condition corresponds with an improvement of from 25 per cent. below standard to 8 per cent. below standard, and represents a condition of safety that should correspond with a reduction of fatalities from a little over 3 per 1,000 to one-third this number.

It is rash to predict that the statistics of accidents in the mines affected by this inspection and safety engineering service will be reflected in the statistics for this year or next. It is, however, reasonable to believe that such a result will be effected within the next three or four years, provided that as much relative progress in the improvement of the condition of the mines is made during the next few years as during the past few months.

A concrete example will doubtless show more clearly than any other method how insurance inspection which fixes merit rates under workmen's compensation effects improvement in the conditions of mines and consequently promotes the safety of the workmen.

The condition of the mine in this example, as regards safety, was found to be such that an average of 70.6 charges was made against it, whereas the number of charges against the average mine operating in the state was only 25.

The easy, obvious and safe action for the insurance company to have taken would have been to cancel the insurance on this mine. But despite the fact that the Associated Companies is carrying the workmen's compensation obligation for 2,500 mines, in no single instance has this action been taken. Reliance has been placed entirely in the ameliorative effect of the schedule of rating.

RATE ON THOUSAND MINES LOWERED 18 PER CENT.

In this particular case, as in many others, the argument of reduction in premium to be paid on insurance was so strong that within four months a reinspection was requested by the assured on the ground that the company had improved all the conditions on which there were charges. The reinspection developed the fact that all the mines of this company had been rendered so much safer that the charges against them could be reduced from 70.6 as found on the first inspection to 8.5 charges as found on the second visit. As a result the premium rate to the company was reduced from \$6 to \$2.82 per hundred dollars of payroll, thus saving the company \$15,000 a year in insurance premiums, a sum more than sufficient to pay in one year for all the improvements made.

This example is not an isolated one. The average rate for nearly one thousand mines that were inspected and schedule-rated in Pennsylvania was on first inspection \$3.55. When reinspected the rate was reduced to \$2.90. The change indicates a saving to the insurees of nearly a million dollars—a sum of money so large as to prove an effectual lever in inducing the operators to put into effect large changes in mine conditions.

INSURANCE MORE POTENT THAN DIRECT LEGISLATION

The chief mine inspector of one of the most important mining states was somewhat skeptical, as were others, as to the possibility of bringing about further improvements than those attained by the action of his inspection department. Recently he wrote:

If all the suggestions contained in your Safety Standards are complied with a marked reduction in accidents would no doubt result.

I have found saying and doing are entirely different things, and if you can succeed in forcing compliance with these rules you will accomplish what the State Mining Department has failed to accomplish for years, without complete success, and there should be at least 50 per cent. fewer accidents than occur at the present time.

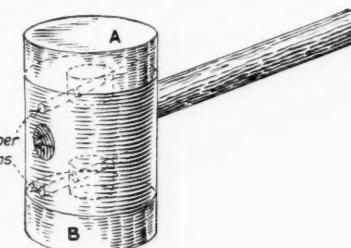
In the prosecution of the safety-engineering work under this system, great stress is laid on the education of mine operators, as well as of mine workers, concerning the causes of accidents and means of their prevention. The attitude of the miners and operators in the different states of the Union toward the safety propaganda of the insurance inspectors furnishes the best proof of the value of education in promoting safety. In some states, where there is lack of organized coöperation among the operators and where they rarely meet together to discuss the technical and safety features of mine operation, the efforts of the inspectors to improve safety conditions meet with

indifferent response, and produce but little favorable result. In other states, where the mine operators are organized for the consideration of safety as well as operating problems, and where the mine workers are brought together in frequent field meets in first-aid and mine-safety demonstrations, the propaganda of the inspectors has met with intelligent and hearty response and has been reflected in the prompt improvement of all the dangerous conditions found.



A Soft Hammer

The illustration shows a form of soft hammer more convenient than the ordinary kind. Ends A and B are



CONVERTIBLE SOFT HAMMER

of copper, lead or brass, which may be changed to meet varying needs, being held in position by taper pins. The solid part of the hammer is of iron.—B. A. Donley in *American Machinist*.



The Slogan*

BY BERTON BRALEY

You may fill your plant with each new device

That the market holds; you may blithely hire
Efficiency men at the highest price

Who will change things 'round to their hearts' desire,

You may have a place that the crowds admire
For its polished brass and its engines neat,

But it won't be just what you most require
If it doesn't show in the profit sheet.

You may pay for the smartest of trade advice,

On the way to coal and the way to fire,

You may fall for the catalogs that entice

With many things for the wary buyer,

In patent fuel you may take a flyer

(The smallest cost for the greatest heat")

But of each and all you will swiftly tire

If it doesn't show in the profit sheet.

Though "power from a central plant" sounds nice,

If it doesn't pay it will rouse your ire,
And you look with an eye as cold as ice

On the man who raises expenses higher,

Yes, your plant might waken a poet's lyre
To passionate ballads, clear and sweet,

But your satisfaction would soon expire
If it didn't show in the profit sheet.

You can give this out to the public crier

As a phrase of wisdom he can repeat,
"We're strong for progress, but we require

That it all must show in the profit sheet!"

*Reprinted from "Power."

Recollections of a Manager

The directors of our company were each interested in a large number of different companies situated in almost every country of the globe. As a result they had to pass upon engineers' reports covering almost every known mineral and representing all of the world's important mining districts, and unexplored regions as well. Many of these reports were passed on to me and comments requested.

Most of the reports that I saw were of absorbing interest. In order to arrive at the value of a mineral deposit many things have to be considered by the engineer; for example, the transportation facilities of the country, the labor conditions, climate conditions, the laws of the country and the stability of its government, the standard of living of its inhabitants, etc.

From the first the thing that impressed me most strongly in these reports was the evidence that they contained of the scholastic abilities of the men who wrote them. Facts of history and political economy were scattered all through them, and the authors apparently took for granted the reader's complete familiarity with such subjects. I recall that one of the engineers was sent to make a report on a coal property in a country where no coal had ever been mined; one-third of the report was taken up with a discussion of the coal itself, and the deposit was shown to be a remarkable one. The balance of the report concerned itself with labor conditions (past, present and future) in the country in which the deposit was located, and the engineer did not hesitate to conclude that the deposit could not be profitably worked for the next 50 years. Of course, time alone could verify the truth of the assumptions that he made, but his argument was sufficient to carry conviction to the men who had employed him, and his recommendations were accepted. Incidentally, the report might easily have been used as a thesis for a doctor's degree in political economy.

I recall that occasionally the engineers were driven from the lands they were sent to inspect before their inspection was completed, and one engineer had to report that he was compelled to flee the country and warned never to return if he valued his life. Still they always managed to obtain data for a report. Another engineer had to report that three engineers had at different times attempted to complete the inspection for which he was employed, but each in turn had succumbed to a fever that seemed always to be prevalent in that particular locality; the engineer making the report did not even mention whether he had experienced any trouble from the fever. Neither did he condemn the property on account of the prevalence of fever in the locality; instead, he outlined the steps that were necessary to rid the country of the fever for all time.

One of my directors gave me a report to comment on that described a property that had been operated under several different managements, but never successfully; the report suggested that the failure must be attributed to the standard of living of the laborers employed. The same engineer several years before had reported that a certain mine was unprofitable because the government officials who had granted the original concession were anxious to get the property back and to that end had actually inspired lawlessness in that section of the country.

This same director admitted to me that the written reports of certain engineers were so interesting that he

and other directors were influenced largely in retaining these men year after year because of the pleasure they received from reading their reports.

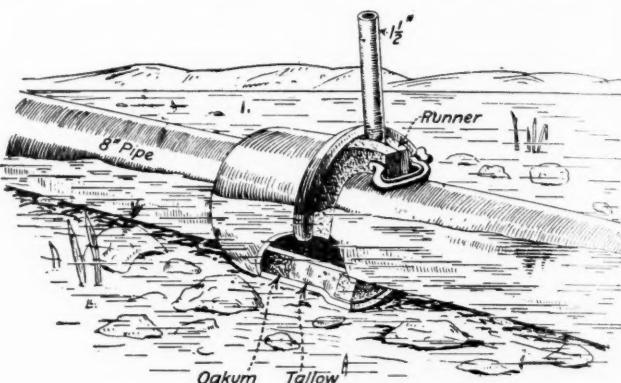
Still, many of our lawyer and literary friends contend that engineers' writings are as uninteresting as multiplication tables.

x

Pouring Lead Joint Under Water

The illustration shows a lead joint on an 8-in. pipe line. This joint was made under water, as we could not get all the water out of the river bed.

The oakum was first packed in, then the space for lead was packed with tallow. As the hot lead was poured in



LEAD POURED IN WET PIPE JOINT

through the 1 1/2-in. pipe it forced the tallow out. We did not have good luck at first, but after a couple of trials succeeded in pouring a good joint.—Thomas Sheehan in *Power*.

x

American Mining Congress

Both the Federal and state mining department exhibits are to be features at the nineteenth annual session of the American Mining Congress, which opens at Hotel La Salle, Chicago, Nov. 13. The entire seventeenth floor of the hotel has been set apart for the exhibits, and the indications are that it will cover advances made in the past few years in the mining industry. The convention headquarters are now open at Rooms 213 and 214, Hotel La Salle.

COMING MEETINGS

The Rocky Mountain Rescue and First-Aid Contest, which was to have been held in Golden, Colo., the latter part of September, will be held some time during May of next year. Lack of time for adequate preparation was the cause of the postponement.

The American Mining Congress will hold its 19th annual session during the week beginning Nov. 13, 1916, at the Hotel La Salle, Chicago, Ill. Secretary, James F. Callbreath, Munsey Building, Washington, D. C.

The American Institute of Electrical Engineers will hold its 326th meeting in the Engineering Societies Bldg., New York City, Friday, Nov. 10, 1916, at 8:15 p.m. The general subject of the meeting will be Inventories and Appraisals. Secretary, F. L. Hutchinson, 33 West 39th St., New York City.

The Coal Mining Institute of America will hold its annual meeting on Wednesday, Thursday and Friday, Dec. 6, 7 and 8, 1916, at the Fort Pitt Hotel, Pittsburgh, Penn. The annual dinner of the Institute will be held on the evening of Dec. 6.

The Labor Situation

General Labor Review

In Michigan there has been a strike in which 2,500 coal miners located in Bay and Saginaw counties were involved. Apparently the trouble was to determine whether the impurities in the coal were to be included in the weight for which payment was made to the miner. The strike occurred on Oct. 2 and was settled so that the men could return to work on Monday, Oct. 16.

In Kentucky the Central Coal and Iron Co. has signed an agreement with the Southern Miners' Association, a new organization which has arisen as a result of the recent labor troubles.

Daviess County, Kentucky, with mines around Owensboro, is having no little trouble. The mines are all small and there are but a half dozen of them. The miners some time ago sought an increase of $\frac{1}{2}$ c. per ton. They did not insist on more because the union in neighboring counties had accepted the previous biennial wage scale unchanged, modifying only the working conditions. The increase was granted on condition that the powder rate that the miners were paying be raised from \$1.67 to \$2.

With this understanding the men returned to work but new difficulties arose relating to the organization of a union. Again the mine workers voted to return to work but the operators informed them that there was nothing for them to do, and stated that the costs of operation were increasing and at the prices of coal prevailing there is no profit in operating their mines and they would rather shut down indefinitely.

On Oct. 1 all the employees of the Moss Coal Co. at Meldrum, Ky., were granted an increase in wages of 10 per cent. The Hazard Coal Co.'s plant at Hazard, Ky., was closed down on the morning of Sept. 27 by a walkout of the miners who had elected a checkweighman that the company refused to allow on the tipple.

The miners at Virden, Ill., recently went on strike to enforce a demand for \$6,000 which they alleged had been taken from them by the short weights of the Royal Collieries Co. About 500 men were involved and the strike lasted three weeks. A majority of 35 voted for a return to work pending arbitration, this action being that urged by the officials of the United Mine Workers. John Glenwright, of Riverton, has been sent to Virden by state mine officials. He will endeavor to adjust the dispute.

Difficulty Feared in the Southwest

Oklahoma and Arkansas seem to be nearing a general strike which is all the more remarkable because so much progress was made toward an agreement. Nothing augured trouble. Everything was settled but Sections 4 and 6. John P. White himself was on the ground counselling moderation and it was decided that the wage scale being adopted the mines should be continued in operation under the working conditions of the 1914-1915 contract till the new conditions were settled.

The miners were to receive an increase of 3c. per ton for mine-run coal, shot from solid or mined by machine; 5c. advance on pick-mined coal and a 5-per cent. advance on all yardage and room work.

A change in Section 2 of the contract provides that when there is a failure to agree with a local superintendent a board member may be called upon to pass upon the case before it is referred to the joint board.

There has been much unrest in the Oklahoma and Arkansas fields forming District 21. Recently the miners at No. 2 mine at Huntingdon went out on strike for a week because they were not satisfied with the room-turning prices. The men in No. 3 struck in sympathy. Charges in this connection were brought against Dave Reed, the mine foreman, and a joint committee investigated them.

At Bonanza, Ark., the men of mine No. 135 of the Rheinhard & Bar Coal Co. struck on Sept. 22 because the duration of the working day was shortened by the interference with traffic caused by a car being overturned in the mines. The contract between miners and operators provides that in any such case the company shall pay the miners for the time lost, the compensation being based on their average daily production.

For some reason the company demurred on a settlement on this basis, and the men walked out. The mine was idle for about a week, after which time the men went back to work.

Montana seems likely to conclude a contract satisfactorily, and in Washington where the men quit work pending the completion of a referendum it seems probable that the men will return to work as the agreement submitted seems to have received the favorable suffrages of the local unions.

At Soddy, Tenn., the mine workers employed by the Durham Coal and Iron Co. have demanded an increase in wage of 10c. per ton and an increase of 10c. per day for the tipple and other outside men. V. Z. Myers, the manager of the company and the union men, led by John Smith, the president of the local, and Fred Lynch have been holding a series of conferences. The price of mining has hitherto been 50, 60 and 70c. per ton according to the grade of coal mined.

Conditions in Western Pennsylvania Improve

Labor conditions in Somerset County, Pennsylvania, are slightly improved over last week. The Pretoria mine of J. Blair Kennerley near Holsopple has 19 men at work, five more than a week ago, in spite of the efforts of the United Mine Workers.

At Hooversville the Knickerbocker mines and the Baker-Whiteley Coal Co. are still gaining a little, and at Listle the Stauffer-Quemahoning Coal Co. is holding its own. In the Berlin and Myersdale district there seems to be less activity on the part of the United Mine Workers, and the Hocking Coal Co. at Garrett has succeeded in getting started nonunion after being idle on strike for several months. This firm is loading a couple of railroad cars of coal a day. The labor supply there and in the Pittsburgh district seems a little easier the past week, but the car situation is worse except on the Pittsburgh & Lake Erie R.R.

At a meeting of the Conciliation Board held at Wilkes-Barre on Oct. 12 a resolution was introduced by W. L. Connell directing the officers of the Lackawanna colliery of the Temple Coal Co. to appear before the board of conciliators of District 1, to explain why the colliery is on a button strike. The colliery has been idle about two weeks. The resolution was adopted.

A grievance was presented by the Lehigh Valley Coal Co. against the United Mine Workers of America and the grievance committee of Centralia colliery, where for the last several months the men have refused to work on pay day, complaining that the company has changed the system of paying which requires them to lose much more time than they did under the former methods. Witnesses were heard on both sides and the grievance committee finally agreed to have the men remain at work on pay day until the matter is settled before the board.

A Misunderstanding of the Agreement

Contract miners of Beaver Meadow colliery brought a complaint against Coxe Bros. & Co., Inc., asserting that instead of getting a rate of \$1.04 a car, the company is giving them only 97c. The contention of the company is that the \$1.04 rate applies only to places where the coal is 7 ft. thick, and that when the coal is 10 ft. thick is smaller. The officials say that the rate should appear on the rate sheet, but this has never been filed.

Mr. Mathews, president of District No. 9, offered two resolutions which were not passed upon, owing to the absence of Mr. Richards, the operator's representative from that district. The first resolution directed the timber cutter contractors to pay their laborers 7 per cent. increase on rates of 1912 instead of the 3 per cent. which they have been paying. The second directed the companies to meet with the mine committees to add to the colliery rate sheets on file with the board, the rates of 1916.

The board will meet on Oct. 23 to argue before the umpire the issue which has been raised by the machine contractors of the Lackawanna Coal Co. as to whether the operators have the right to make contracts with individual contractors for the mining of large sections of coal. The contention of the miners is that such contracts should be made with the Anthracite Mine Workers' Association.

Up to this meeting the Conciliation Board has handled since the signing of the new agreement 116 cases, of which 57 have been adjusted, 16 are before the umpire and the others are awaiting decision. During the preceding four years there were 198 cases all told.

Owing to the fact that Oct. 29 falls on Sunday the executive boards of the United Mine Workers in the anthracite region have agreed to observe Mitchell Day on Monday, Oct. 30, and circulars to this effect have been sent out to all locals for the observance of this date as a general holiday.

In the circulars sent out it is set forth that those who are required to work "for the purpose of doing such repair work as may be necessary, and those whose duty it is to keep pumps going, machinery in order, etc., should report for work if required by the company officials to do so."

Machine mining, which is making rapid strides in its introduction into the workings of the anthracite region, has once more become the subject of a wage dispute. At the Taylor colliery of the Lackawanna Coal Co. a machine-mining contract was let to a single contractor at a rate in excess of the regular union scale, but the union miners object to a single man controlling the entire work of the machines and the dispute has now been ordered before the conciliation board by Charles P. Neill, umpire of the peace board.

Owing to a scale of prices established by the Lehigh Coal and Navigation Co. it is possible a protest will be filed by the unions of the Hazleton section, the complaint being founded on the allegation that it is a violation of the agreement to increase the prices on coal sold to employees.

In some sections the prices have been increased from \$2.25 to \$4.25 a ton.

*

Miners Found in Contempt

It will be recalled that during the West Virginia coal mine strike of 1913 Judge Dayton issued an injunction prohibiting members of unions or others from interfering with employees of the West Virginia-Pittsburgh Coal Co. The union officials continued this interference, it is stated, and as a result Fanny Sullens, James Oates, Hiram Stephens and Fred Ledvinka were charged and found guilty of contempt of court, sentences of six months' imprisonment being imposed on them. These sentences were affirmed by the Fourth Federal Circuit Court of Appeals, and on Sept. 29 the persons convicted appealed to the Supreme Court for a review, claiming that important legal principles of contempt jurisdiction that were not settled in the Gompers-Mitchell-Morrison case are involved.

Another celebrated contempt-of-court case is one where Judge Frank A. Youmans imposed jail sentences of four months each on Peter R. Stewart, then district president of the United Mine Workers in Oklahoma, and Frank Guipando, George Burnett and Pink Dunn, union leaders.

Judge Youmans made this decision on Sept. 1, 1914, on charges made that the defendants had violated an injunction which the court had issued against them, restraining them from interfering with the operations of the Bache-Denman coal interests in the Hartford Valley in Oklahoma. These mines, which had hitherto been run under union auspices, were endeavoring to run open shop.

This case also was appealed in this instance, to the United States Circuit Court of Appeals sitting in Denver, Colo. As in the other case, the decision of the lower court was affirmed. The Supreme Court will now have an opportunity to pass on this matter also, the state officials in District No. 21 having announced their intention of carrying the case to that final tribunal.

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Too Slow with Their Favors

The following statement has been received from William W. Miller, the general manager of the Pittsburgh Mining Co., operating at Minersville, Meigs County, Ohio, in the Pomeroy Bend district:

The only reason which has been assigned for the many strikes of one day duration that have occurred at the mines of the Pittsburgh Mining Co. during the past several years has been delays of from 15 to 30 min. in getting the men trips out of the mine at quitting time. All such delays have been unavoidable.

The contract which we have with our men does not give them power to lay off work in this arbitrary manner. The first rule of the contract reads as follows:

"Rule I. All differences of a local nature which may arise between operators and miners of any mine in this district shall be settled by the mine committee and the mineboss; should they fail to agree the difference shall be referred to the officers of the miners' organization and the operators affected; should the miners stop the mine for the purpose of redressing a grievance, it shall be considered a violation of contract, and those who upon investigation are found responsible for such illegal stoppage, or strike, shall be removed or suspended. The investigation shall be made by the district or subdistrict officials."

Appeals have been made by the company to the miners' officials asking them to act and if possible prevent a recurrence of these violations but, up to the present, they have been either unable to prevent these petty strikes or they have been unwilling to take such a stand with the local union as would prevent their occurrence.

At a meeting of the local some years ago the mine workers of the Pittsburgh Mining Co. voted to shut down the mine following a day when the man trip—which is run for the express convenience of the men employed—did not reach the outside on schedule time. Since that vote there have been repeated stoppages of work. The men have not given the management an opportunity to investigate the cause of the delay, though in practically every case that cause has been owing to some unavoidable accident occurring to the last trip of coal, which accident prevented the clearing of the main haulage road for the passage of the man trip.

Such accidents as these occur on the best managed steam railroads in the country, causing freight trains to be delayed for several hours. The miners of the Pittsburgh Mining Co., however, forget that delays of this kind occur and must occur in all industrial operations.

Though a little thought would convince them that this is true they continue to violate contracts and lose money. If they were more philosophic about a few minutes of lost time in getting to the surface, they would better their condition and that of their families and incidentally save the company from much loss. Such a loss the company should not sustain, for have they not a contract with the United Mine Workers of America, and does not the Ohio branch, with which the Pittsburgh Mining Co. has to deal, proclaim itself the best organized branch in the country?

There is no clause in the district contract requiring that the men be taken to and from their work in a man trip. The company believed that the men would appreciate the service and so adopted it, running a special motor trip from the outside at a stated time in the morning and another from the inside in the evening. If there is a derailed car or a broken drawbar, that accident need not delay the miners. They can walk out of the mines here just as they do out of practically every other working in this field. Instead of appreciating our efforts in establishing the man trip the miners have used it as a cause for innumerable strikes of one day duration.

*

Oklahoma May Yet Strike

It will be remembered that the Oklahoma and Arkansas mine operators comprising district No. 21 separated from the Southwestern Operators' Association on Sept. 9. The operators then believed that they could secure better terms from the miners by such separation because the Kansas labor leaders and the miners were more disposed to agitate for changes in the wage scale than were the Oklahoma men.

John Wilkinson, the president of the district, in particular declared himself in favor of leaving section 4 of the contract with its old wording. John P. White, the international president, also favored that stand, as is shown in another article in this issue entitled "President White Scores Howat."

But it is never safe to trust to indications. Unforeseen influences modify the opinions of the miners, and there is much danger that a suspension of the mines will, after all, occur in Oklahoma. The quarrel, while partly over section 6, also covers section 4, which in its old wording was approved, as stated, by both White and Wilkinson. The operators are not disposed to make any concessions despite the threatening situation and will let the men have the strike that they seem to desire.

Oklahoma buyers are expecting a strike and are negotiating for coal which in the event of a general strike is to be supplied from New Mexico, Colorado, Alabama and Kentucky.

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Du Pont Mines Have Trouble

The so-called Du Pont mines, near Central City, Muhlenburg County, western Kentucky, are operated by the Central Coal and Iron Co., and as has been shown in these columns the company worked steadily during the recent long strike, promising to pay the union scale when that scale was ultimately agreed on by the miners and operators of western Kentucky. Finally, the tipple at the plant was set on fire and partly burned, just as a settlement was ratified. It was then announced that the repairs would not be made unless the miners agreed to accept a 10-per cent. reduction.

There has been much feeling aroused against the United Mine Workers of America because that organization refused to support the strike of the western Kentucky miners. The miners have urged that in the past they paid large sums of money into the union and have never received any benefits. Even when they were starving because of a strike which was really legitimate—even if it be granted that it was ill-advised—no money could be obtained from a union to which they had for many years lavishly contributed their earnings.

There was therefore a strong feeling in the air for the formation of another and rival organization, and it was formed, being named the Southern Miners' Association. The Central Coal and Iron Co. has made a contract with this new body and will do business with it. It is perhaps not the most generous thing to do, for the leaders of the International union were fighting a battle with the miners to induce them

to accept a wage which would make it possible for the miners to work. In doing this they were helping the operators, yet on the first opportunity a contract is signed with those who have held to the contrary idea that the companies should have conceded more. This is opportunism with a vengeance—an opportunism which must inevitably cause some extremely hurt feelings.

The union leaders have not acted badly in western Kentucky, whatever the union workers may have done. They have labored to arrange rates which were low enough to permit western Kentucky to continue at work. It seems callous to turn around and favor the opponents of the union leaders who have tried to render such a considerable service to both operators and men.

The company will employ United Mine Workers, but the organization they belong to will not be recognized. The company has secured a gatling gun and placed it on a high mound overlooking the property.

X

No Strike in Washington State

Washington State, with 4,700 union miners, constitutes district No. 10 of the United Mine Workers, Martin J. Flyzik being president. The Washington Coal Operators' Association has 14 operators as members. There are 6 or 7 operators with unionized mines who are not members of the association, but they will have to pay the scale now being determined. The mines at Renton and Bayne are nonunion, so the scale paid at those places may or may not be influenced by the agreement now to be made.

On Sept. 9 the biennial convention of district No. 10 was reconvened, and the delegates voted unanimously to reaffirm their original stand for a 5-per cent. increase of wages. The negotiators were ordered not to permit the discussion to extend beyond Oct. 1. At that time, or before if necessary, a strike was to be ordered.

But the best terms the mine workers could induce the operators to offer was a 5-per cent. increase on day wages only, and a 3-per cent. advance on tonnage, yardage and dead-work and a certain remuneration for car pushing in the Roslyn-Cle Elum field.

Instead of striking, the leaders called a meeting of the district convention for Sept. 29. This convention ordered a suspension of all but the firemen, pumpmen and other employees needed to keep the mines in condition, but it also provided for a referendum to determine whether the scale offered by the operators should be accepted.

Apparently the referendum was entirely favorable to the scale offered. The mine workers in the smaller locals have voted about in the proportion of 9 to 1 in favor of the proposition of the operators. It will be noted that the rise in wage is proportioned as the mine workers desired. The day men, who generally receive the smaller pay, receive the larger percentage increase in wage and also the larger actual increase also.

X

President White Scores Howat

At recent meetings held at Hartford, Huntingdon and Bonanza, Ark., President White severely criticised Alexander Howat for changing section 4 in the Kansas City Agreement, which he declared was now less favorable to the miners than before. District President John Wilkinson, of the Arkansas-Oklahoma district (No. 21), was at all of these meetings and heartily indorsed what White said, stating also that he was, and had always been, opposed to any change in the section. He stated that Howat, however, could not be induced to modify his demand, and the other members of the conference from his district disagreed with him and lined up with Howat.

The clauses in section 4 which are unusual are numbered 5, 6 and 7. These clauses practically remove the right of hiring from the operator and give it to the union. They are as follows:

5. No member of the United Mine Workers of America shall be denied employment except for sufficient cause, other than personal prejudice or activity in matters affecting the United Mine Workers of America, and when an applicant for work is denied employment, and it is claimed by him that an injustice has been done him, investigation shall be conducted by the tribunals in the manner set forth in section 1 for the adjustment of grievances and shall be taken up promptly. If it is proved an injustice has been done, the mine management shall give employment to said applicant and pay him compensation for time lost not to exceed seven days. The reasons assigned for not employing said applicant shall be set forth during the investigation. It is understood and agreed that the taking up and investigation of discharge or applicant cases will take precedence over all other cases except shutdowns, and no list shall be kept for the purpose of regulating the employment of applicants in violation of this contract.

It is provided, however, that the foregoing provisions of this section shall not apply to a man that is a menace to the

safety of the lives of himself or other employees in such mine. Neither shall it apply to an applicant who is incompetent to perform such labor or to men who continue to neglect their work, or to men who for any other justifiable cause are refused employment, and no one shall be considered as coming under the provisions of the above paragraph who when making application for work is at the time employed elsewhere or has an application for work pending at another mine.

7. It is understood and agreed that the company shall select its day and monthly men, based upon their qualifications and fitness for the work to be performed; provided, however, that any applicant claiming he has been discriminated against shall have the right of appeal as provided for in paragraph 5 of this section, and a hearing and final disposition of said appeal shall be made in conformity with paragraphs 5 and 6 of this section. It is further provided that no day or monthly men employed at such work shall be transferred to mining ahead of any applicant waiting for employment as a miner, at the time said day or monthly man was employed.

There are lots of men of the anarchistic type that neither the company nor the union cares to hire. The men present themselves for work; the company is required to give a reason for rejecting them; there is an appeal to the union, which must practically give a reason for sustaining the operator or compel the employment of a man they know is not desirable.

His rejection on the ground of his seditious character at the work and in the union creates all manner of trouble. The union does not want to see such men get work, and at the same time the leaders do not care to put themselves on record as opposing the giving of work to men who are liable to be too radical for peaceful coöperation with the union.

Apparently that is not the reason given by White for urging that the men should not ask for the right to be hired on demand unless after trial by the union they are found undesirable. His argument appears to have been based on the fact that the section condemns the blacklist. The contract appears to state that the union may not keep a blacklist against any undesirable workingmen. Howat in a declaration states that it may, as it is not really doing the hiring. Only the man who is really the employer is so debarred; the miner is still in a position to blacklist whom he will.

X

Rockefeller's Wage Scale

Perhaps the wage scale of the Colorado Fuel and Iron Co. can hardly be termed with absolute correctness the Rockefeller scale, but the public and the miners insist that the C. F. and I. Co. and John D. Rockefeller are one and inseparable. On Sept. 1 the Fuel and Iron Co. raised wages 3c. per ton, not of course for the reason stated in the papers, but because the contract with the miners required that the company make the same increase as competitive fields. However, the company did a little better than it promised.

The newspapers said that the increase was given so that the miners would work harder and give the railroads a better chance to meet conditions likely to be suffered by them if the threatened trainmen's strike materialized. As the increase is hardly large enough to make any miner work harder, as miners usually work less hard when the scale is increased, and only a few days—rather a few hours—remained before the day appointed for the trainmen's strike, it will be readily seen that no such cause animated the company's action. The newspaper report was a perverse attempt to explain away an increase which the company was partly compelled to give under the terms of its agreement with its men and was partly moved to give by its own generous instincts—those instincts being quite clearly manifested in the many provisions made in the past and now being made for the comfort of the employees.

Miners' Wage Scale at the Morley (Colo.) Mines

The company did not quibble in making the increase. Wyoming had not given quite the full amount of the increase conceded to other sections in the New York Agreement, but the C. F. and I. gave it without any compulsion. The rate at the Morley mine is as follows: Pick mining, mine-run, 58c. per short ton; entry and crosscut yardage, \$1.57 per yd.; entry and room brushing, \$1.05; room crosscuts, \$1.05; setting crossbars in entries, 52c. each; same in rooms, 26c. each; turning rooms, \$5.25 each; loading rock or water, 52c. per car. The cutting of rolls, faults, etc., is to be a matter of agreement between the mine foreman and the miner.

In justice to Wyoming it should be pointed out that in that state the Morley rate of 58c. per ton was the minimum rate paid by the Union Pacific Coal Co. at Rock Springs, Wyo., and Hanna, Wyo., and by the Central Coal and Coke Co. at Sweetwater, Wyo., from Sept. 1, 1912, to Sept. 1, 1914. Since then the wage scale has been renewed and modified—in 1914 and the present year. The deadwork scale was also more liberal between the dates mentioned and is even more so now.

The labor unions in Colorado quite generally admit that the Colorado Fuel and Iron Co. is using no coercion to keep the mine workers from becoming members of the union.

Who's Who in Coal Mining

George A. Burrell

The United States Bureau of Mines is becoming more and more a technical training school for our future consulting engineering specialists. Messrs. Hall, Paul, Higgins, and a number of others, have severed their connection with the Federal Mining Bureau and have established themselves as independent engineers, and now comes Mr. Burrell, who has made an enviable record as a chemist in the Government's employ. It is to be regretted that Uncle Sam must lose such men, just when their services would be of the highest value to the technical investigations of the Mining Bureau, but such has ever been the case in Government work and will



GEORGE A. BURRELL

continue to be the rule as long as private enterprise bids highest for brains and experience.

George A. Burrell is a very young man to have accomplished so much that is really worth while in an engineering way. He was born in 1882 at Cleveland, receiving his final collegiate training in chemical engineering at the Ohio State University, where he graduated in 1904. Notwithstanding his lack of years, he is the oldest employee in point of service in the Bureau, having started with the Coal Testing Branch of the United States Geological Survey in St. Louis in 1904.

He went to Denver in 1906 to take charge of a laboratory installed in that city in connection with a Government plant to study the coking and washing of coals of the Rocky Mountain region. In 1908 he was transferred to the Forestry Service in Washington, D. C., to study the use of wood for fuel purposes. It was at this time that the Bureau of Mines was created, and Mr. Burrell entered into his more important work of

organizing and developing a research department for the study of mining problems. He has published about fifty pamphlets relating to his activities in this field.

He has worked hard to remove certain erroneous and popular beliefs regarding mine gases, in order that exact data regarding the fundamentals of this question may be had. This includes work on the nature of mine gases; which work is the most exhaustive in this country. He finds that in normal mine air, other combustible gases than methane are of such rare occurrence, except in the case of occasional leakages of natural gas into mines, that they need not be considered. He has done important work in connection with deadly carbon monoxide gas in order to show the exact conditions under which it occurs in mines, and how to test for it. More than anyone else in this country he is responsible for the introduction and intelligent use of small animals and canary birds in testing for carbon monoxide.

Also he has been instrumental in removing the impression held by some that carbon monoxide can be detected by a safety lamp, and has shown beyond dispute that this gas can be present in mine air in deadly proportions and the safety lamp not show it. He has made many studies of mine fires, and has published several papers covering these occurrences. In gathering this and similar data he made many visits to mines, often under adverse conditions during fires or explosions, and worked all hours of the day and night in the mine gathering information.

Mr. Burrell devoted considerable time to the composition of exhaust gases from gasoline locomotives and in company with O. P. Hood, chief mechanical engineer of the Bureau of Mines, published a bulletin on the subject. This publication shows that carbon monoxide is a poisonous constituent, the exact conditions under which it may form and the sorts of mine ventilation necessary to cope with it. The natural conclusion as regards the use of automobiles is that great care must be used in operating them in closed and unventilated garages, else fatal consequences may follow to the operator. The public press has devoted more or less space to this kind of accident.

Mr. Burrell's work on the explosibility of mine and other gases covers hundreds of experiments, showing the exact conditions under which methane and other gases may be explosive. He developed a system of gas analysis depending upon the use of low temperatures, whereby many complex gas mixtures hitherto impossible to separate by ordinary methods can now be accurately analyzed. His publications on this work have been many. A recent bulletin by him covers the question of black-damp in mines in all of its phases in both coal and metal mines. He has devised many gas-testing instruments that are in successful use all over the country.

One of the mining appliance companies is building at the present time several hundred of a new gas detector he spent some years in perfecting. With this device a test for firedamp can be made in less than two minutes

with an accuracy of 0.1 per cent. The instrument is light, made of metal and not complicated. Firebosses will find it very useful. It is believed to be the first accurate testing device ever developed for use in mines by inexperienced men. This instrument is not a "flash in the pan" device, to be exploited and then forgotten, but a really useful tool. The Bureau of Mines engineers and others have made many tests with it, and its usefulness has been thoroughly demonstrated.

Mr. Burrell has devoted one-half of his time in recent years to problems relating to the natural gas, gasoline and petroleum industries. He was the first to show the true composition of natural gas by means of experimentation with liquid air, and he rid the industry of the fallacy that natural gas contains carbon monoxide, hydrogen ethylene and other gases not found in natural gas. He established the fact by means of experiments with natural gas from all sections of the country that the gas consists of the paraffin hydrocarbons with smaller quantities of nitrogen and carbon dioxide.

In leaving the Bureau's service Mr. Burrell does so because opportunities for greater remuneration are offered than the Government service affords, but states that if he were starting out again and had the choice, he would do just as he did do—that is, enter the technical service of the United States Geological Survey or Bureau of Mines, in that the opportunities are great if a man takes advantage of them, and the associations are of the most pleasant kind. He adds that the Bureau of Mines is at present equipped to take a leading place in the development of the stupendous resources of this country.

Mr. Burrell is president of the Natural Gas Products Co., Inc. He is a member of the American Chemical Society; also the Natural Gas Association of America and the West Virginia Natural Gas Association.

Isaac G. Roby

The mining world, and particularly the large body of bituminous mine inspectors in Pennsylvania, together with a great circle of lifelong friends at Uniontown and elsewhere, were shocked by the sudden death of Isaac Given Roby, which occurred at 8:30 o'clock, the evening of Sept. 21, 1916, a brief notice of which has already appeared in *Coal Age*.

Mr. Roby was one of the veteran bituminous mine inspectors in Pennsylvania. He was appointed to that position by Governor Stone, in 1900, and served continuously to the time of his death. Although Mr. Roby had not been in robust health during the past year, this had not interfered with the performance of the active duties of his office. Just before his death, he had returned from a vacation trip, on which he had visited Washington, Baltimore, Gettysburg, and other points of interest in the South.

On the morning of the day of his death Mr. Roby was conscious of slight pains in his left side, which passed off later, leaving him in good spirits and able to enjoy his customary after-dinner pastime of playing with a neighbor's child. It was at that time he was suddenly stricken with what proved to be "angina pectoris"—a painful contraction of the lower chest accompanied with a suffocating sensation and organic affection of the heart and larger blood vessels.

Mr. Roby was born at the old Roby homestead, at Cheat Haven, W. Va., Mar. 29, 1857. His father, Isaac

F. Roby, was an agriculturist who was well known in his community and had, by his industry and ability, come into possession of valuable coal lands. At an early age, the subject of this article became much interested in coal-mining affairs, and previous to his appointment as mine inspector for the fifth, bituminous district of Pennsylvania Mr. Roby had risen to the position of superintendent for the Penn Coal Co., at Smithfield, Penn. His long residence at Uniontown, Penn., together with his integrity of character and devotion to the thorough inspection of the mines in his district, had greatly endeared him to the coal operators with whom he daily came in contact.

The prevention of accidents in mines was a matter that absorbed the deepest thought and called for constant effort on the part of Mine Inspector Roby, who gave the question of mine safety and rescue work unremitting attention. In response to numerous requests, Mr. Roby



ISAAC G. ROBY

had contributed valuable articles to technical coal-mining journals.

At the organization of the Mine Inspectors' Institute of the United States of America, which occurred at Indianapolis, Ind., in June, 1908, Mr. Roby became a charter member of the organization. He had also served as secretary-treasurer of the Coal Mining Institute of America, which led him to make addresses at different points, both in the anthracite and bituminous regions of Pennsylvania. Mr. Roby was a member of the Odd Fellows, Knights of Malta and the Elks societies, all of which united to pay their respectful tribute to his memory. He had long been an honored member of the Second Methodist Protestant Church at Uniontown.

Mr. Roby had a natural love for children and was possessed of a whole-souled, happy disposition that endeared him to all his friends and made him a valuable member of society. His death is a distinct loss, not only to the State Mining Department, which he had served so well for so long a period, but to the mining world at large, and *Coal Age* extends its deepest sympathy to members of his family in their sore affliction.

Editorials

Too Slow with Their Favors

In a communication to the Labor Situation this week entitled "Too Slow with Their Favors," William W. Miller, the general manager of the Pittsburgh Mining Co., throws a light on the reason why in many instances companies are chary about assisting their men in the doing of their work. Once an improvement is permitted or established, not only must it not be discontinued, but it must be so handled that no one can find fault with the service rendered.

A company builds a hospital and equips it and then charges the men enough to run it. The plan operates smoothly until it is found that the charges collected are higher than is necessary and that a fund is growing steadily. The company, not desiring to accumulate funds, reduces its rates till the surplus is exhausted and renews the old rate when the balance in the bank has reached a more normal figure.

Immediately there is an uproar. The miner is sure that the higher rates were always too high and that there was a large profit in the running of the hospital, even at the lower rate that the company temporarily established. The union demands control of the building and personnel, which is granted. The institution immediately loses money, and then the union demands that the company operate the hospital. And thus it is that a company with every good will toward its employees finds itself bitterly awarded for all its generosity.

Many an improvement of a sociological order waits on this difficulty. Once established, it must be continued or a strike will result. Once a record is set, it must be bettered or maintained.

Furthermore, the workman refuses to believe in the company's generosity. Imagined acts might conceivably be termed generous, but not those that are already accomplished. What has been done is almost never regarded as generous. It is always fear or a sense of advantage or a desire to secure more men that is believed to have animated the improvement. The workman denies the existence of anything other than horse business sense, and his own captiousness compels the operator to look at matters from the same point of view.

If the workman will look into his own heart and view his own actions, he will find he is feeling generous instincts himself, and doing some good deeds without hope of reward. Can he not believe that his brother, the operator, also has moral promptings and liberal actions of a like character? Why make them impossible by a factious behavior?

Mr. Miller hauls his men from their work because he prefers so to do. No agreement compels him to do it, only his own good will. But sometimes switches are turned wrongly, cars are off the track, partings are crowded and the man train is late, and Mr. Miller is disciplined by having his mine closed the next day. Surely he and men like him will argue, "The less we do the better, for if what we do is done superlatively well

it secures no approval, and if not done with unvarying efficiency it is a basis for strikes and disorder."

Gifts of every kind are viewed with suspicion, and if a chicken and corn are given, the recipient strikes for a turkey and plum pudding. No wonder that the operator becomes a reactionary, for the faster he travels the more mercilessly some agitators would ply the whip. "You see," they say, "he has speed and action. Let us try the whip; perhaps we can better the gait."

* * *

Coal Shortage in New England

On Hampton Roads coals there is a perceptible shortening up of the supply at Down East points as compared with a week ago. The car supply has had periods of falling off to a marked degree, and as a result loading dispatch with most of the agencies is nearer a week than the three or four days' average that prevailed for a month or more.

It should not be gathered from this, however, that there is any great shortage of these coals for the normal requirements of the coastwise trade; it is more a matter of output being inadequate for the abnormal demand created largely by the export and bunker business. Now and then a high-priced cargo is bought for New England delivery, but it is usually found that such purchases are occasioned more by extra sales off-shore at even higher figures. Shippers are very cautious about accepting additional marine tonnage and are striving to keep the movement from the mines regular enough to clear promptly the bottoms they are under season obligations to load.

Less and less "free" coal is offering, either f.o.b. or at Boston. The uncertainty of dispatch is so great, no shipper being willing to make guarantees, that the casual buyer gets little encouragement. After canvassing the market he is more likely to turn to grades out of Philadelphia where conditions are more easily gauged. Then, too, those obliged to enter the market at this time are more likely to buy small cargoes than large, an additional reason for turning to New York or Philadelphia.

Pocahontas and New River in small amounts can be picked up at \$6.50 to \$6.75 on cars Boston or Providence, but the volume is light and generally confined to cargo balances after contract deliveries have been made. There is still almost an entire absence of any speculative effort in the smokeless coals so far as the New England market is concerned.

In anthracite New England buyers are actually offering premiums as high as \$1.35 per ton for stove coal and even \$1 on chestnut, providing a liberal quantity of stove accompanies the sale. The Philadelphia trade is amazed at these offers; while they do not doubt that there is a strong demand from the East for coal, they certainly feel that their New England brethren are losing their heads and indulging in a scramble that in no wise helps the situation. Whether prices are high or low that district, and every other territory in fact, has always in the past received its due proportion of the fuel mined, and there

is no reason to believe that the same method of anthracite distribution will not prevail at this time. Certainly impatience will not help the situation.

This is generally the situation as reflected in current reports from all parts of the country, as, for instance, in the Pittsburgh district, where the past week has seen the sharpest advance in prices in the history of the trade in that section. The increased demand has heretofore been of a spasmodic character and generally localized, whereas it is now apparently sweeping on in a broad movement, covering all parts of the country. The Pittsburgh situation has especially interesting possibilities. The steel mills are largely responsible for the improved condition, and as they are being crowded for increased production, and at the same time are making unprecedented earnings, they are not disposed to take any chances whatever on such a detail as their fuel supply.

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Dangers of "Closed Shop" in Hard-Coal Mines

In the anthracite region dissatisfaction with the union is causing all manner of trouble. It might be expected that this feeling would please the operators and make the running of the mines easy. The reverse is true; the dissatisfaction with the union is making men leave it either for the Industrial Workers of the World or for no organization whatsoever. The men seeing that the union is losing ground become frightened, and strikes occur to promote a 100 per cent. organization. The companies find that for once a united union sentiment would be less hard to deal with than one which is divided. Now they have a condition where the men would rather fight out their difficulties than work.

There is said to be a tendency on the part of the companies toward the "closed shop," in which the mine operator would compel his employees to join the union. This would be a violation of the contract that the company has just signed. It is contrary to the declarations of the operators and that of the Anthracite Strike Commission. Though it destroys freedom of contract, yet opportunists among the operators are said to favor it and are alleged to have urged their men to join the union and save the ceaseless shutdowns that impoverish the men and make operation unprofitable. So long as operators do no more than persuade, they cannot be accused of breaking their contract.

But the operators all deny that they are endeavoring to make union proselytes, even in the mild and legitimate way suggested. They do not like the Industrial Workers of the World nor the frequent shutdowns; but nevertheless they do not favor the union, which has been too long an enemy to wear the guise of a friend with any degree of grace. Besides there is something menacing in the union's attitude; its words run, "Assist and befriend me or I will fall on you," or at best, "Aid me to maintain my hold on your employees or I will lose my present standing and you will be confronted with worse evils than even I have ever inflicted on you, for when I am weak or nonexistent the Industrial Workers of the World will take my place."

The operators are uncertain just where they stand. If they create a strong union to which everyone must belong, then they will by that arbitrary act strengthen all the revolutionary forces within the union. The history of Butte and the Anaconda Copper Mining Co. will be

repeated. The union may be broken, but meantime there will be much violence and a suspension of industry, and perhaps men with far more unreasonable minds will temporarily have the ascendancy.

In fact nothing will destroy the union more surely than winning the closed shop. As soon as the men find they have to belong to the union to get work they will violently attempt to overthrow it. They will resent the curtailment of their liberties, and they will refuse to pay dues to the union. They are doing this already. With how much greater violence will they do it if the unions are regarded as the stool pigeons of the managers, and if the labor leaders are looking to the operators for support in collecting their salaries.

It is a fact that where the union is exceedingly popular and united, the "closed shop" does not have these difficulties; but in the anthracite region it does not seem to be either popular or united. A rival organization was recently started. It does not seem to have any strength, but its mere creation was symptomatic of discontent.

The Industrial Workers of the World refuse to follow union leadership and call strikes of their own. Would these men work with the union even if all manner of coercion by operators and men compelled them to humiliate themselves—as they regard it now—by wearing the union button and paying the union dues? Clearly they would be more insurgent as captives than they are now as free men.

Furthermore, the miners are always striking in direct violation of the union's orders, and two unions have recently been suspended for activity violative of the union's ruling. So it is clear that the unanimity which is the primary need, if a successful closed shop is to be established, is lacking in the hard-coal regions. It could only be established by ruthless coercion, and being based on an injustice it could not have any long duration of life.

■

The Car Shortage

There is no denying the fact that the car shortage is a genuine issue in the current abnormal market, but we hear rumors that it is being exaggerated in some quarters. An official of one of the railroads admitted this week that one source of the trouble could be traced to the lack of motive power. This is substantiated by reports from retailers who claim that empties often accumulate and stand outside their yards for days before they are taken away by the railroad companies. We know of one instance in particular this week where several cars remained on a coal trestle twelve days after unloading.

Dealers whose yards are so arranged that only a certain class of cars can be conveniently handled are permitting shippers to send them any sort of coal car; indeed, we expect soon to hear of them giving permission to ship box cars. This always means great inconvenience besides the delay and extra expense in unloading.

■

Now that cooler weather and shorter days have arrived, we all spend more evenings indoors. This is the time to study and write. Each day should show some advance aside from our regular work. *Coal Age* wants 100 articles describing power plants and power installations at coal mines. The opportunity to enlarge your reputation and at the same time put dollars in your pocket is yours. Don't let this invitation pass unnoticed.

Department of Human Interest

Main Island Creek Coal Co.'s Plant at Omar, W. Va.

By W. T. JONES*

SYNOPSIS—At Omar, much care and money have been expended on such improvements as a wash house, club house, an auditorium, churches, etc. Sanitary conditions are carefully watched and a special sanitary inspector is employed.

The Main Island Creek Coal Co., which has over 30,000 acres of the Island Creek seam under lease at Omar, W. Va., has made great progress in the erection of buildings for the comfort and pleasure of its employees and has a well-organized system of supervision for the safety

*Omar, W. Va.

and betterment of conditions. With the increase in production, which now represents about 12,000 tons a day, the management has endeavored to improve the social and sanitary conditions of the community in proportion.

At this writing, there are nearly 500 houses completed. For the most part these are plastered, well fenced, and provided with running water. Garbage disposal is taken care of by a steel tank wagon and collections are made daily. The management has purchased trees for the main streets and plants, flowers and shrubs for the most advantageous points. A model dairy is installed, and a wagon makes two deliveries a day. An up-to-date ice-making plant with a capacity of 12 tons a day is housed in the basement of the store.

One of the most up-to-date bath houses in the state is in use at this plant. The entire ground floor of the building is taken up with the baths, while the second

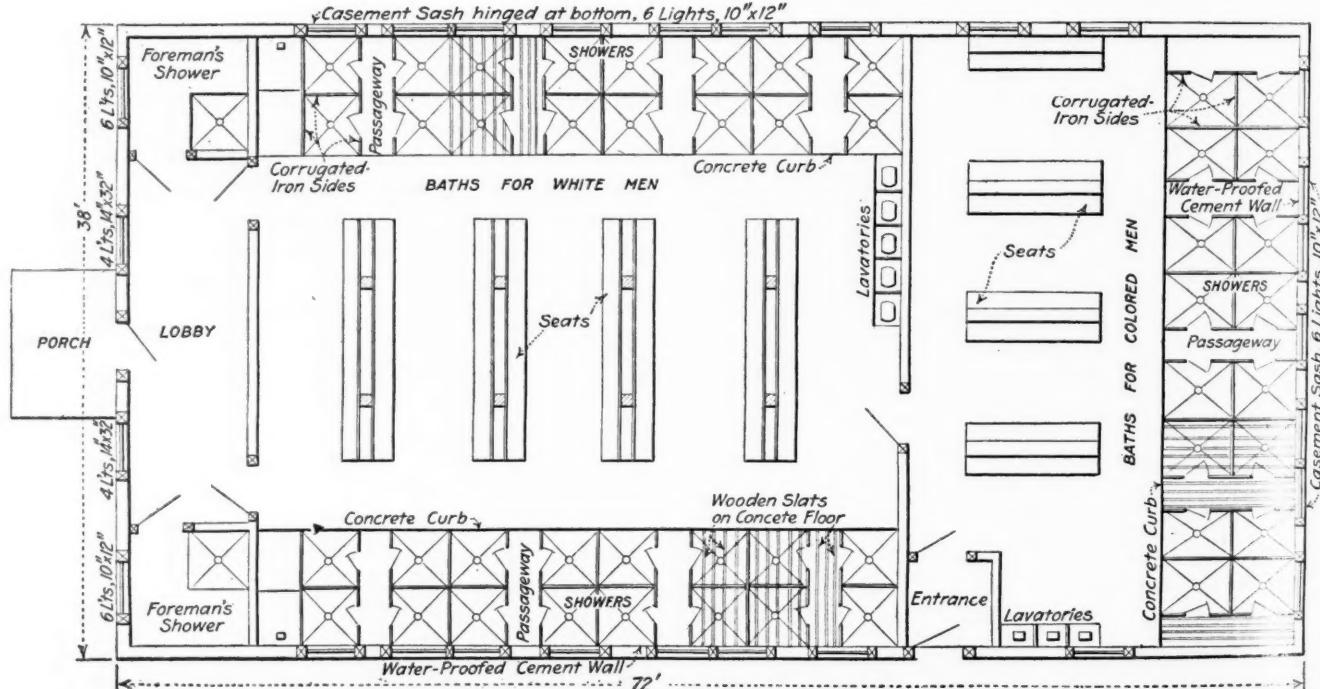


FIG. 1. PLAN OF BATH HOUSE, SHOWING ARRANGEMENT OF SHOWERS, SEATS AND LAVATORIES



FIG. 2. OMAR, SET IN A PICTURESQUE MOUNTAIN VALLEY, IS A WELL-ORDERED VILLAGE WITH SIDEWALKS AND PROVISIONS FOR A WHOLESOME COMMUNITY LIFE

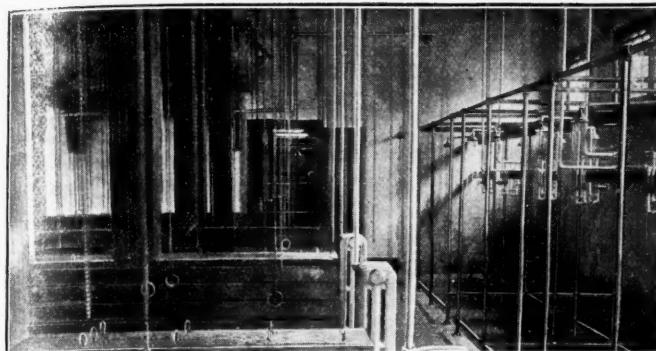


FIG. 3. INTERIOR OF THE OMAR MINERS' BATH HOUSE



FIG. 4. EXTERIOR WITH NEGRO FIRE-DRILL CHAMPIONS

floor affords a spacious lodge room. The bathroom floor contains 60 showers besides private baths for the mine foremen and other officials. There are two sections—one for the white population and one for the colored. The attendant in charge furnishes each bather with individual soap and towel. This increases the sanitary conditions, since the used towels are not allowed to accumulate in odd corners and become musty. As will be noted in Fig. 3, which shows a section of the baths, the clothes are run up near the ceiling on chains which allow them to dry. These chains are fastened to the backs of the seats. The bath house at this time will accommodate nearly 500 white and 300 colored men. In accordance with the general scheme of the other buildings it is designed so that it can be enlarged later.

The auditorium, which can be seen in Fig. 5, consists of a motion-picture theater with a seating capacity of 500, and also houses the Young Men's Civic Association. The latter has for its aim the betterment of the individual, in mind and body.

The same reels seen in the large cities are shown nightly in the theater, and hence the popularity of the movies in Omar is growing continuously. From time to time safety reels are exhibited and explained by a competent lecturer.

The ground floor contains reading rooms and refreshment stands, as well as billiard parlors and the barber shops. The white people have an uptodate three-chair barber shop and an eight-table billiard parlor with a modern soda fountain, where light lunches, etc., are served. In another section are located the reading rooms. Here are kept on file all the current magazines and periodicals. Classes are also conducted here for those desiring to take the mine foreman's examination.

The colored people have a two-chair barber shop and a five-table billiard parlor, as well as refreshment and lunch stands. In their reading room are kept the same periodicals to be found in the reading room designed for the white men. The company has got out plans for the erection of a pavilion to be placed in front of the colored and white sides of the Auditorium for social events, such as dances, etc.

There is now in use a club house, which can be seen in Fig. 2, that contains 30 bedrooms, with a shower and tub bath on each floor.

The spacious porch is inclosed with glass so that it can be used for dancing purposes during the winter as well as in the summer. There is a substantial union church next to the bath house. The Catholic church can be seen in Fig. 2, next to the club house. The col-

ored people also have a church and lodgeroom installed in a substantial two-story building.

The fire department consists of two chemical engines and two hose crews. A 100,000-gal. steel tank, set well up on the hill, affords ample pressure. The fire companies have regular meeting nights, and there is a keen spirit of rivalry in the competing teams for prizes offered by the management.

A house inspector is employed whose chief duties are to see that no unsightly or unhealthful conditions exist. All stagnant water and other mosquito-breeding places are oiled regularly. The management has offered three prizes for the best-kept yard. The doctor's offices and



FIG. 5. SUPPLY HOUSE, STORE, BATH HOUSE, AUDITORIUM AND POST OFFICE

first-aid station are located in a central part of the town. This, as well as all other points both inside and outside of the mines, are connected by a telephone system. Each mine has its subsidiary first-aid station furnished with the usual first-aid articles and a Pumotor. One mine rescue squad and four first-aid teams are maintained. All the members of these teams have received training on one of the Government mine rescue cars and are now drilled by competent persons.

The West Virginia Workmen's Compensation Commissioner reports that in the 34 months from the establishment of the department till Mar. 31 of the present year the receipts have been \$3,484,299.22 and the administrative expense \$163,575.15, or 4.7 per cent. of the premiums collected. This expense is contrasted with the 40 to 60 per cent. incurred in the administration of private insurance companies. The department has received reports of an average of 1,547 accidents per month and has made an average of 1,693 payments per month for cases of temporary disability and 1,530 payments in pension cases. In all, 1,684 fatal cases have been acted upon. Cases are disposed of on an average of one week after the necessary reports are received. The sum of \$1,250,000 has been paid on account of injuries and \$195,825.63 for the treatment of the injured by physicians at home and for their treatment and care at the hospital. More than 600 widows, 1,127 dependent children, 200 dependent parents and 495 employees suffering from permanent disabilities are in receipt of pay from the commissioner.

Discussion by Readers

Technical Writing

Letter No. 1—Some interesting ideas are advanced on the advantages of technical writing, *Coal Age*, Oct. 7, p. 568. The subject is one worthy of further treatment, and I want to suggest a few points that may prove of some value to *Coal Age* readers who should be writing and giving to others the benefit of their ideas. Every man, whatever his occupation, trade or calling, is able to write if he is at all observant of his surroundings and does his own thinking.

The trouble with many practical men, whose ideas would benefit a host of others, is that they are either too busy to put their thoughts on paper, or think that they cannot write. Others who make the attempt use too many words. They seem to have an ambition to use high-flown language instead of simple, plain English to express their ideas. This is often the fault of beginners.

To all of these I want to say that there is no secret about writing. It is not necessary that you should be a born editor in order to write successfully for a trade paper or a technical journal. Write simply as you would talk—be natural. Before you start to write have the idea clearly in your mind, and tell it in as few and simple words as possible. Never attempt to write about a thing that is not clear to you, as you cannot expect to succeed then in making it clear to others.

In order to write interestingly one must have something to say and, as I stated before, any intelligent man can find something of interest and importance in his everyday work that others will be glad to know. Don't be afraid to express your thoughts, but when writing make your sentences short, remembering that a short sentence is always more easily understood by the one who reads. The points to be remembered are: Have something to write about; understand it clearly yourself, and then put your thoughts in as few and simple words as possible.

Brooklyn, N. Y.

ALEX MOSCOVITZ.



Steel Mine-Track Ties

Letter No. 1—In reply to the letter of M. L. O'Neale, on "Steel Mine-Track Ties," *Coal Age*, Sept. 30, p. 556, I wish to state some of my own observations.

The Pond Creek Coal Co. makes extensive use of steel mine ties for room trackwork. All coal is gathered by electric, cable-reel motors. The rooms are driven to a depth of 360 ft. with 16-lb. rails. No bonding of rails is done in the rooms.

I have often noticed the difference in the "return" of adjoining rooms, where one room is laid with wood and the other with steel ties. There are other factors, however, which may also have a bearing on the case, particularly the tightness of the fishplates at rail joints and the cross-bonding of the switches.

The steel ties are not so effective as they should be, unless they are kept tight on the rail, which is essential to good track, however. It is also important to have the rail joints staggered as suggested in Mr. O'Neale's

letter. Of the different types of mine ties the Cambria and the Fairmont types I have found most effective, as they fit tighter to the rail and remain tight longer.

In general the steel ties are found to effectively take the place of bonding in room tracks so far as gathering-motor haulage is concerned, but I have found it necessary to use a double cable on mining machines in order to bring the return back to the bonded track.

C. W. STAFFORD,
Mining Engineer.



Coal Mining, Politics and Labor

Letter No. 4—The foreword on "Coal Mining, Politics and Labor," written by Carl Scholz, *Coal Age*, Aug. 5, p. 211, deals briefly and at long range with a complex and vital question that now confronts the industrial world. But, like most other writers on this subject, Mr. Scholz offers no satisfactory solution of the problem.

The power and ability to adjust differences between capital and labor satisfactorily consists largely in the art of beginning at the right place and in the right way. Many of the efforts put forth to solve and adjust these differences, which are at times both real and imaginary, are like trying to build a chimney by starting at the top. The permanent adjustment of many of the vital issues between capital and labor will not be attained through the channels of politics. Such a desired end will only be reached by making the interests of employer and employed one, by perfecting a system of coöperation that will bring mine operators and mine workers so close together that each will understand and fully appreciate the other.

THE MUTUAL DEPENDENCE OF CAPITAL AND LABOR

We must consider that capital and labor are, in a large measure, inseparable, and that each is dependent upon the other. Labor produces capital, and capital rewards labor for its service. Both have their individual rights that must be respected. Instead of being at odds, they should be on the best of terms, for neither can exist long without the other. Both capital and labor must also bear in mind that the general public has rights that are to be respected, and that their mutual endeavors operate to bless and benefit the entire race of man.

We hear much about capital crushing and grinding labor, while little is said about certain efforts of labor to destroy capital by forcing it, through legislation, to seek safety in retirement, which is equally hurtful to labor by destroying the demand for workers. Industry should not be unduly hampered by legislation and labor go unrestrained. I sometimes fear that we are rapidly approaching a period in our industrial history when capital will suffer greatly at the hands of labor. A considerable portion of the laboring classes are becoming more unreliable each year. Many laboring men do not care to work at anything or any price.

Many coal miners spend their time shifting from one mine to another, working but little anywhere. In some

instances the mine management is no longer the controlling power, and the men do mostly as they please, working only when it suits them, without any regard for the operator's interests. Again, there is a selfish and grasping class of employers, who in order to make large profits will take every advantage of their employees and show little or no interest in their comfort, welfare and safety. These make no effort whatever toward educating their men and elevating their standards of living, or cultivating a coöperative spirit among them.

On the other hand, there is a responsible class of miners and laborers who are thrifty, honest and steady workmen and who show a true interest in the prosperity of their employer. There are also employers who have a high regard for the safety, comfort and interest of their employees and willingly share with them their prosperity. Employers and employees of this latter class furnish the only hope of a satisfactory adjustment of the problems of the industrial world. For in them we see, though yet but dimly, encouraging prospects of a change being effected that will bring into practice in the labor world the golden rule, when the interests of men will be mutual and common.

I think Ernest L. Bailey has the right view when he states, *Coal Age*, Aug. 26, p. 358, "There is really no struggle between capital and labor, but rather between the two classes of labor—the working class and the managing class." Here, then, is the place to begin the work of reconstruction that is ultimately to change our whole economic system. The question now before us is, How can such a change best be effected, or through what channels and mediums is it best to work to bring about the desired conditions? All efforts to harmonize the differences between capital and labor through the medium of politics will, I believe, only result in failure.

ENEMIES OF CAPITAL AND LABOR

Irresponsible labor leaders who are the enemies of capital and, in fact also, the worst enemies of labor, working jointly with scheming politicians to get themselves and others of that ilk into office, strive to make political issues out of all the petty differences that arise in the industrial world. To put the contentions between capital and labor into the hands of scheming politicians and treacherous labor agitators for adjustment, would prove destructive to the interest of the whole industrial fabric. Labor when influenced and controlled by selfish and unreliable leaders may force capital to make unreasonable and even unjust concessions at times; but, in most instances, capital will retaliate in some way as soon as the opportunity is afforded.

Capital and labor consolidated constitute all our enterprises. Together with civilization they produce prosperity, and elevate society. Consequently, labor must not be shackled and imposed upon by capital, nor capital hampered and throttled by labor, since in either event the interests of both parties will suffer. But, working jointly and harmoniously, the standards of living of the whole human family are raised to a higher level.

Carl Scholz has rightly suggested that the coal-mining industry is fast coming to be a considerable factor in modern politics. A few years ago a large element of labor voters did not do their own thinking in political matters, but gave their votes into the hands of grafters and corrupt politicians who used them for their own selfish

interests. But, today, it is encouraging to notice that, among miners and other laboring men, there is a rapidly growing tendency to think and vote for themselves. The great mass of miners and others employed about the mines are no longer voting, as in former years, the way the boss and superintendent says, but are beginning to think and act for themselves in political matters. When the managing and working classes learn to be fair and honest with each other, each treating the other in their dealings as they would have the other treat them under similar circumstances, then will they be drawn closely together by the strong bonds of a common and mutual interest. Then will both understand the relation they sustain to each other and the industry at large and, let us hope, differences that arise will be speedily adjusted by the golden rule.

JOHN ROSE,

Dayton, Tenn. Former District Mine Inspector.

Coal-Mining Examinations

Letter No. 2—Speaking of examinations for certificates of competency for mine foremen and firebosses, allow me to say that it would appear, to anyone in touch with the situation, that some of the boards of examiners seem to forget that they are examining applicants for positions on practical issues.

Judging by the character of many of the coal-mining examinations, one is forced to conclude that the members of the boards have seemingly run out of practical commonsense mining questions, since the examinations, in many instances, drift so far away from the real point at issue, which is or should be to ascertain the competency of the applicant to fill the position for which he seeks a certificate.

It is hard to understand how practical mining men, sitting as a board of examiners, will permit themselves to launch out into all kinds of technicalities. Many of the questions asked are meaningless, some are unintelligible, while others do not relate directly to the business in hand. I have seen many questions that appear to be merely catch questions, which practical mining men have neither time nor inclination to study.

Let us glance for a moment at the candidate who is to enter the examination and who is desirous of obtaining a certificate of competency to act as either mine foreman, assistant foreman, or fireboss. If the man is sincere, he has prepared himself by hard study to pass a practical examination. He expects to meet a body of practical mining men and to be asked questions that concern his work in the mine and which are designed to show his ability to perform the duties of the position he seeks. But often to his surprise the examination contains very little that is of a practical nature. Instead of that, he is presented with an array of technical questions, none of which gives sufficient data for its solution, and some may be unpractical and cannot be solved in conformity with mining conditions.

Attention has been drawn to this style of question quite frequently in *Coal Age*. I have noticed, in the department, "Examination Questions," under the head of "Selected Questions," or "Answered by Request," many questions the meaning of which it is difficult to correctly understand, while others leave too much to be assumed by the candidate, and on that account the answers given are no doubt quite variable.

I do not wonder that, as a result, good practical mining men are often disgusted and refuse to sit at another examination, because the questions asked do not fill the needs of the work in hand. This is not only grossly unfair to the applicant, but reflects on the practical ability of the members of the examining board and is a distinct loss to the industry in its results. Not infrequently it happens that members of examining boards are unable to answer the questions they ask, which have generally been formulated for them either by the engineer of the board or by outsiders at the request of the board members.

SUGGESTIONS FOR MINE EXAMINING BOARDS

Having thus rather severely criticised the work of many examining boards, allow me to make a few suggestions along this line, which are prompted only by an earnest desire to help to improve this serious situation. Let me say to all board members, Be fair and square in the conduct of the examination. Never take advantage of an applicant's timidity, but make him feel at home. Encourage him in every way possible. Before making up the questions to be asked in an examination, let the members of the board study carefully each question to ascertain if it sounds like a practical commonsense mining question. Accept no questions until convinced that they relate to matters with which every practical mining man should be familiar.

Eliminate from the candidate's work in examination the extraction of square and cube root. If sines, cosines, tangents, or any other constants or values are needed in the solution of a question, either give these to the candidates or permit them to refer to the textbooks which they commonly use in working out such questions at home or in the office.

Never require a candidate to memorize formulas, which aside from being a memory test have little of practical value to recommend their being retained in the memory. The practical mining man needing these formulas, constants and other values, in connection with his work, always finds them by referring to his textbook. For that reason, candidates should be allowed the same privilege in a practical examination. The question is, Does the candidate know how to use such formulas and constants, and is he familiar with the textbook that he needs for the solution of practical mining problems?

The questions asked in examinations for mine foremen, assistant foremen and firebosses should include the subjects of mine gases, ventilation, pumping, hauling, tracklaying, rock work, timbering, cost of producing coal, first aid and prevention of accidents in mines. An examination based on these subjects will result in certifying to the competency of good sound practical mining men for these positions.

EDWIN HUSBAND,

General Superintendent, National Coal Co.
Cumberland, Wash.

An Efficient Coal Miner

Letter No. 7—I am interested in the discussion of efficient miners. In his Letter No. 3, *Coal Age*, Sept. 16, p. 474, Oliver Young states that from 70 to 80 per cent. of the miners in the bituminous field of Pennsylvania are foreigners and about all they know of mining is how to load their coal. In my opinion it will not be long before practically all the miners will be foreigners, as the Amer-

ican miners are leaving the mines and seeking other occupations.

Now is the time to make efficient miners out of that class of labor. Let the foreman and his assistants when visiting their working places instruct them how to perform their work with safety to themselves and others. Have them read the mining law and safety bulletins. Explain the dangers to them. With the majority of foreigners, if you gain their confidence so that they know you are trying to help them and are interested in their personal welfare and working to protect the health and safety of all men in your employ, it will not be long before you will have a mine full of efficient miners.

It is true there will be some men you will find, on making your visits, to whom you gave instructions the day before as to timbering, spragging coal, blasting, etc., who have ignored their instructions. Have these men load their tools at once and have the cause for their discharge advertised throughout the mine. I believe the next day all the working places would be up to the requirements of the law, and there would be found many miners efficient who were not considered as such before.

Enforce the mining law and the mine-safety rules. Establish and enforce a system of timbering the working places. When making visits to the working face talk safety to the men; show them the danger that exists in doing foolish acts; and the majority of miners will be found working for safety at all times. And, after all, the efficient miner is the miner who performs his work with ordinary care and safety for himself and others.

Hooversville, Penn.

CLYDE BERKEY.

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Improving the Coal Industry

Letter No. 3—In my opinion, W. H. Noone made an excellent suggestion in regard to bettering the coal industry, *Coal Age*, Sept. 23, p. 507, and the prize offered by *Coal Age* for the best and most practical suggestion was very properly awarded to him.

Although Mr. Noone will undoubtedly answer the questions asked by Samuel Dean, in his letter No. 1, Oct. 7, p. 608, I feel constrained to state that Mr. Dean has missed the mark in his interrogations. It is wholly unnecessary to give presidents and other executives bonuses in order to secure an increased production of coal, although this may be done in rare instances and clerks may also be included at times. But the bonus system is always applied with good effect to operatives paid by the unit, as piece work in factories and tons in coal mining.

Neither is it necessary to increase the margin between cost of production and selling price, as Mr. Dean suggests, though that would always be welcome. When orders for coal accumulate it is of advantage for an operator to increase his output by every possible means, and by so doing he not only increases his returns but enables the miners to likewise increase their earnings. The opportunity is afforded, also, to reward the industrious worker and make him feel that he is an important factor in the operation of the mine, which increases his interest in his work and his respect for himself. This is surely a benefit to the industry.

Referring to the suggestion of coal being sold "at a price below the cost of production" and the employment of "ten sales agents" where one would suffice, no one

claims that this bonus system is foolproof, but rather that it is capable of intelligent and successful operation even against such odds, if made elastic enough to fit the requirements of the sales department. Surely, no sane man would pay bonuses on coal for which there was no immediate sale.

Advocates of the bonus system recognize that it is of more difficult application in coal mining than in factories, which are less dependent on car supply; but these difficulties are not beyond the ability of mining men to overcome. Advocates of the system also recognize that, for some incomprehensible reason, it has met the active opposition of labor unions, when it should have had their complete indorsement.

BONUS SYSTEM COMING, SURE

However, since the system, as Mr. Noone says, "has been successfully established in other industrial fields" why can it not be used in the coal industry? Some operators who recognize the merit of the system seem to hesitate, because they fear the difficulties to be encountered. Despite these drawbacks, however, the bonus system will come sooner or later—a prominent advertiser says, "Eventually"—but why not now?

I want to compliment Mr. Dean on his excellent suggestion that this matter should be threshed out until it is settled one way or the other, and I know of no better medium for doing this than *Coal Age*, which not only reaches the operator who must bear the responsibilities of putting the system in practice, but also gives the underground officials and the miners themselves a chance to be heard. Certainly, their viewpoint will be worth while having.

Following Mr. Dean's letter is one by "Ex-Miner," who was, I am sorry to say, touched in a sore spot by my suggestion (page 506) to "make the mines absolutely nonunion" until the men cease sympathetic strikes, etc. I know this is a sore point—resembling a cancerous growth. But, as with a cancer, the knife is the only effective remedy. It is true that the operation must be performed with a cool nerve and resolute will. Ex-Miner refers us back 20 years to the days of nonunionism, but the conditions at that time were quite different from those confronting the industry today.

Had Ex-Miner read my letter more carefully, he would have seen that I took no stand against unionism as such but against a phase of the organization that is becoming more and more objectionable and which in the end will prove the death of unionism, if it does not first kill the industry itself. Ex-Miner's statements that he does not believe in strikes, and has faith that unionism properly controlled can be made of benefit to the men, put him in practical accord with my own position. The proper control of unionism is the test of the whole question. An arrangement between two parties when broken by one of the participants renders further negotiations between the parties impracticable.

There is nothing, either in law or in equity, that can be taken as supporting the idea of a sympathetic or a button strike. Suppose, for example, that Jones is paying scale wages and Smith's miners strike because he refuses to do the same, any candid mind will agree that it is a gross injustice to Jones for his miners to start a strike in order to coerce Smith to pay the scale to his miners. The wrong is all the greater when the men have accepted the scale and signed a contract to remain at work.

A button strike is just as bad or even worse than a sympathetic strike, since it places the union men in the position of denying the right of a nonunion man to work, which is an intolerable proposition, in a free country like ours or anywhere on God's earth where men must labor to live. If union men want to prevail on nonunion workers to join them, that is a question to be settled between themselves, and it is a decided wrong to penalize the mine operator, who is in no way concerned in the dispute. Were it not for their serious results these strikes would be laughable, for the miner who joins in such a movement is like a child who pouts in the corner because he is denied what he asks.

Ex-Miner's reference to mine foremen's increase in salary is not pertinent, as foremen are not members of the union; a union miner being required to surrender his membership in the union when appointed mine foreman. I fail to see how unionism can be accredited to the foremen's increased compensation, which is owing to his experience and capability being greater than formerly.

The question of union labor is a many sided one, but miners and other workers must not resort to practices that ignore the rights of their employers. When conditions are not desirable in a mine, the difficulty of securing the necessary force of miners will generally force the operator to improve them. The miner acts wholly within his rights by staying away from such a mine. On the other hand, he must remember that the coal loaded in the mine cars has to be sold in a competitive market where the operators' troubles often begin. Let the miner study these conditions and he will better realize the difficulties with which the operator must contend.

I heartily agree with Ex-Miner that there are other ways of settling differences than to strike. A little diplomacy will do more and cost less for both sides, besides being more dignified and retaining the respect of each party for the other. The war conditions in Europe at the present time are a terrible object lesson of the utter futility of using force to settle men's differences. The pity of it all is that the same diplomacy that will ultimately be brought into the peace negotiations could have been used in the beginning to have prevented the strife that has taken such a terrible toll in human lives and the wealth of nations.

C. S. SCHWARZ.

Blairsville, Penn.

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Certification of Mine Foremen

Letter No. 6—I have read with a great deal of interest the letters relating to the certification of mine foremen and the employment of uncertified foremen, as permitted by what I would style the "joker clause" in the new Compensation Law of Pennsylvania. I was glad to read the letter of S. D. Hainley, *Coal Age*, Aug. 26, p. 360. Mr. Hainley expresses the belief that few uncertified men will be employed as mine foremen as the result of the new law, and advises all young men to keep on studying and get the certificate of competency required under the old law.

In this connection it is interesting to know that examinations for certificates of competency to act as mine foremen, assistant foremen and firebosses have been required in Pennsylvania since the enactment of that law in 1885. Later, in 1889, a miners' examining board was created

by a law that prohibited the employment of miners in the anthracite region of that state, until they had obtained a certificate from the examining board. A similar examination of candidates for the office of mine inspector was legalized in the anthracite region in 1891 and in the bituminous region of Pennsylvania in 1893.

Now, it is natural to assume that if the mining law requires the certification of mine officials through a process of examination, "equally competent" men will not be produced until they can give satisfactory evidence of their competency. When a candidate for foreman, assistant foreman or fireboss is able to produce such evidence to the satisfaction of his employer, it will devolve upon the mine inspector to see that he is capable of serving in the office to which he is appointed. If a man, in the opinion of the inspector, proves incompetent, he should be quickly set aside, although this would throw a greater responsibility on the mine inspector.

The accident rate in coal mining, in the State of Pennsylvania is, I believe, lower than that in any other state, which is probably owing to the employment of certified men as mine foremen, assistant foremen and firebosses in the Pennsylvania mines. In my opinion the people of that state should see to it that no law is enacted that would be in conflict with the old law requiring the certification of mine officials.

REASON FOR THE NEW LAW

There is no doubt much room for criticism in regard to the kind of problems submitted for solution in mining examinations. Also, it can hardly be questioned that there are good practical and experienced miners in Pennsylvania who are qualified to take charge of mining work underground and to perform the duties of fireboss in gaseous mines, and yet many of these men have not sufficient technical education to enable them to work most of the problems submitted in examinations. It was to enable the employment of such men in these positions that the new law was enacted, I presume.

However, no coal operator should take advantage of this "joker clause" in the compensation law to appoint a man to the position of mine foreman who has not had at least 15 years' experience in mines or is less than 35 years of age. Also, a man should have served his time as fireboss before he could be considered competent to act as mine foreman. In my judgment coal operators would do well to ignore this provision of the mining law and employ only certified men to fill these positions. This would have a tendency to develop more competent men, as good miners would continue to study for these positions.

The mining laws of Pennsylvania, I believe, are not essentially different from those of Colorado; and, while I am not familiar with all the requirements of the Pennsylvania law, a brief recital of what has been accomplished in Colorado in the reduction of the mine-accident rate, by the enforced employment of certified men during the past two years, will not be amiss. For example, the fatal-accident rate in Colorado, with the employment of uncertified men during a period of 28 years, will average 7.14 per thousand men employed.

The new coal-mining law of Colorado (sec. 171) makes it unlawful for any mine operator to employ an uncertified mine official underground after Jan. 1, 1914, when the law went into effect. Since that time, the accident rate in the coal mines of the state has been reduced to

5.1 per thousand men employed, and a much greater reduction is expected to follow in the near future. The mining men of Colorado will permit no "joker" when it comes to playing the game of modern coal mining.

An important provision is made in sec. 44 of the Colorado mining law, to the effect that "any superintendent or other person who interferes with the mine foreman in the discharge of his duties as prescribed by the act will be guilty of a misdemeanor," and sec. 172 provides the penalty of a fine of not more than \$1,000, or imprisonment for not more than one year in the county jail, or both; and each day's violation means a separate offense.

In closing allow me to say I am for the employment of only certified mine officials. If Pennsylvania is to maintain her low accident rate of 3.42 per thousand men employed in the anthracite region, and 2.87 per thousand men employed in the bituminous region, she must see to it that only certified foremen are placed in charge of her mines.

ROBERT A. MARSHALL.

Farr, Colo.



Gasoline Motors in Mines

Letter No. 3—Supplementing my remarks in regard to gasoline haulage in *Coal Age*, Sept. 16, p. 474, and in answer to the questions asked by the correspondent from Sydney, N. S., in his Letter No. 2, Sept. 30, p. 552, I would say that our locomotives operate in the intake airway, and that during the five or six years that these locomotives have been in use here, no complaint has been made about the toxic nature of the exhaust gases.

Of course, it must be understood that through the airway in question there is passing a current of 40,000 cu.ft. per min., so that the percentage of injurious gases is very small and only detectable by smell in the immediate vicinity of the locomotive. Moreover, the machines are in the entry only about twenty minutes at a time, so it is safe to say that however wrong it is theoretically, under our particular conditions nothing can be said against operating these locomotives in the intake.

As far as the special problem of the Sydney correspondent is concerned, if he will get from the manufacturers of the locomotive he contemplates purchasing specifications of the diameter of the cylinders, length of stroke and number of explosions per minute when running under load at full speed, he will get the amount of exhaust gases liberated, at least sufficiently accurate for practical purposes. Considering then that 1 per cent. of these gases is carbon monoxide and that 0.1 per cent. of this gas when breathed is highly injurious or even fatal when inhaled for any length of time, he would have to multiply the total amount of exhaust gases by 100 to give him the total amount of air required per minute to dilute the exhaust gases sufficiently to make them harmless, or say 0.01 per cent.

Of course, as another contributor states in the same issue of *Coal Age*, it is when the engine is working badly that there is a particularly high percentage of carbon monoxide in the exhaust, so it seems that the first requirement would be to select a locomotive that has a reputation for good performance; and, in this case as everywhere else, it would probably be advisable to buy the machine that will prove to be the cheapest in the long run; that is to say, the best machine.

Frank, Alberta, Canada.

P. M. SHERWIN.

Inquiries of General Interest

Mine Weights Govern

Can *Coal Age* inform us whether it is customary for mine interests when contracting to furnish coal to large consumers to agree that payment shall be based on weight of coal at destination? It is our opinion that the invariable rule is for contracts to be based on mine weight and that the mines thereby avoid responsibility for any shortage that may develop at destination.

New York City.

WHOLESALER.

It is not only the custom but the uniform practice of coal shippers to stipulate in all contracts to furnish coal, whether at tidewater or f.o.b. mines, that invoice weights at the original point of shipment shall govern settlements. In other words, on coal sold f.o.b. mines "mine weights govern," and on shipments by water, whether sold f.o.b. loading ports or alongside destination, the cargo bill of lading is conclusive as to weights. The cargo bill of lading calls for the aggregate weights of individual cars of coal that were dumped into the vessel.

It is or should be well understood, of course, that in the case of either carload or cargo, it is up to the consignee to show undue loss of weight in transit, but even in such instances the claim is against the carrier. From the moment it leaves the mine, coal on an f.o.b. basis belongs to the consignee, and if lost in transit it is the duty of the consignee to file the claim and to look to the carrier for compensation. Differently stated, the responsibility of the coal shipper ceases when he has delivered the coal to the carrier, and from that point on it is in all respects at the risk of the purchaser, at least as against the shipper.

As *Coal Age* pointed out in an editorial (Sept. 30, 1916), one of the features of the proposed uniform bill of lading is a provision whereby the consignor of coal or other merchandise may avoid any liability for freight and charges by stipulating on the face of the bill that the carrier shall not make delivery to the consignee without first requiring from the latter the payment of such charges. Where commodities are transported in bulk it is clearly the tendency of the times to shift the burden of possible loss or wastage from the shipper, who normally does business on a small wholesale margin, to the consignee, who is ordinarily closer to a retail profit.

In a case where cargoes of water-borne coal may be contracted for f.o.b. cars at a railroad distributing plant for shipment inland, it might be stipulated that weights at that point would govern. The cargo would then be sold "weighed," whether it would be for one consignee or several. If in another case the bill of lading weights are intended to govern, it should either be so stated in terms, or the word "unweighed" would be sufficient.

In some of the old forms of cargo bill of lading still in use there is included an expression, "less 1 per cent. for wastage in transit," which meant that no claim could be allowed for shortage not exceeding that percentage. *Coal Age* remembers when certain manufacturing plants

in New England were accustomed to buy coal with a clause, "mill weight to govern, less 1 per cent. for shortage," but they were obliged long ago to give it up because of the uniform practice of coal shippers.

Inspection of any of the printed conditions for the sale and shipment of coal will make plain that the producers insist that all sales shall be at invoice weight as taken at point of shipment.

The Spiral Casing of a Fan

Kindly explain the proper method of laying out the spiral casing of a centrifugal fan.

Patton, Penn.

ROBERT M. NEWCOMBE.

The correct design of the spiral casing of a centrifugal fan is one of its important features. The expansion of the peripheral space surrounding the fan wheel must be uniform, so that the air flowing from each compartment between the consecutive fan blades will flow with a uniform velocity that is equal to or slightly greater than the tip speed of the fan and in the same direction.

It is important to remember that the pressure at the circumference of the fan forces the air to take the shortest possible route to the fan drift leading into the mine when the fan is blowing, or to the chimney when it is exhausting. Hence, it is necessary to start the spiral from near the point of cutoff and allow it to expand uniformly around the fan wheel to its full expansion, when the point of cutoff is again reached. The amount of this expansion, in feet, is determined by dividing the volume of air passing (cu.ft. per min.) by the velocity of the blade tips (ft. per min.) and that quotient by the width of the fan blade (ft.).

To lay out the spiral, first describe the full circle of the fan wheel and on its circumference mark the point of cutoff. Then cut out a circular templet having a diameter equal to three-eighths of the full expansion of the casing. Fix this templet in place so that its center coincides with the center of the fan wheel. Attach a cord to a point on the circumference of the templet, about opposite to the point of cutoff of the fan, which should be in line with one side of the fan drift. Then wind the cord about the circumference of the templet, in the opposite direction to that in which the fan wheel revolves.

Now, with a radius 1 in. greater than that of the fan circle, describe an arc equal in length to the distance between two consecutive fan blades, starting from the point of cutoff and taking the direction of the revolution of the fan. This arc is concentric with the fan circle and practically closes one compartment of the fan, so that the air is forced to travel around the fan wheel in the direction of its revolution. From the end of this arc, with a marker attached to the cord previously mentioned, describe the line of the spiral casing to its full expansion opposite the point of cutoff, allowing the cord to unwind from the templet. The end of the spiral should be tangent to the opposite side of the fan drift.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—A tract of coal land contains 1,500 acres, with the coal seam 500 ft. below the surface, the seam being 4 ft. thick and underlaid with 3 ft. of fireclay and 4 ft. of sandstone. Over the coal is 5 ft. of slate and above the slate are sandstone and shale measures, and the coal seam is known to give off gas. How would you proceed to open and develop the property to produce 1,200 tons per day of 8 hr.?

Ans.—The first point to be considered, after prospecting the entire field to ascertain the thickness and general inclination of the seam, is the proper location of the hoisting shaft and surface plant. This must be determined, with respect to both the surface and underground conditions. The surface conditions include a suitable building site and shipping facilities, while the underground conditions concern chiefly the question of haulage and drainage in the mine, which depend on the general dip of the seam. When opening a mine, the location of the shaft should be such that both coal and water will gravitate toward the shaft bottom if such a location will provide a suitable building site and shipping facilities on the surface.

Having decided on its location, the size of the hoisting shaft is the next question of importance. The shaft, in this instance, should be a three-compartment shaft, providing a double compartment hoist and a good manway, which is also used for conducting pipe lines, electrical conductors and signal wires down the shaft. The size of the hoistways must first be determined by ascertaining the dimensions of the mine cars required for this output.

The car must have a suitable capacity and its dimensions must conform to the thickness of the seam, nature of the roof and floor and the system of haulage employed. The height of the car is practically limited by the thickness of the seam, while its width is largely controlled by the nature of the roof and floor, and the requirements of the mining law in respect to the required clearance between the car and the rib, on all haulage roads. The height and width, in connection with the capacity of the car, will determine its length; and this, in turn, fixes the required width of the hoisting shaft, after allowing a clearance of 6 in. between the bumpers and the sides of the shaft.

The length of the shaft must be such as to include the width of two cars, four guides, two lines of buntons, and the width of the manway, and make due allowance for clearance on each side of each car. Having determined the dimensions in the clear of the hoisting shaft, the necessary timbering of the shaft must be considered to ascertain the required size of the excavation.

The sinking of the hoisting shaft having been accomplished, and the necessary sump provided for the drainage of the mine, the shaft bottom must be laid out to conform to the general method of working to be adopted.

A good shaft pillar must be allowed and suitable provision made for pumproom, stables, connection with second opening and aircourses, together with a good mine hospital, toolroom and other shanties. The width and length of the shaft bottom must be sufficient for the requirements of the output. If the seam is very gaseous, the mine should be opened on the triple-entry system, the middle of the three main entries being the intake airway and haulage road, while the two side entries are made the return aircourses for their respective sides of the mine.

The further development of the mine must be determined by a choice of that method of working that is best adapted to the underground conditions, having due regard, also, to the available supply of labor. This being a gassy mine, it may be better to adopt a panel system of mining, the panels being formed by driving cross-entries to the right and left of the main entries, say 100 yd. apart, and opening up consecutive panels as required, by driving headings up the center of each panel and working back the coal in a single longwall breast, using machines for this purpose. Each panel must be ventilated by a separate current and the return carried directly into the main return airway.

Ques.—What general conditions would determine the size of pillars, and what points should be considered in the removal of pillars?

Ans.—The size of pillars in mining must be such as to insure safety and prevent squeeze and thus enable the largest possible recovery of coal. The size is determined by such general conditions as the character of the overlying and underlying strata, depth of cover, hardness of the coal, thickness and inclination of the seam, and, particularly, the nature of the roof as determining the method of working, width of opening and time the rooms must be kept open.

The points to be considered in withdrawing pillars are the possible effect on the surface, the presence of water or gas and the occurrence of fault lines in the overlying strata; the effect on adjoining workings in the mine; and the method to be adopted in order to insure the greatest safety to the men and the largest recovery of coal.

Correction

In the answer to the second question, *Coal Age*, Sept. 9, p. 442, the calculation of the weight of air discharged should read as follows: $200,000 \div 13 = 15,384$ lb. per min. The mass of air discharged per minute is then, $15,384 \div 32.16 = 478$ units of mass. Finally, the energy of the air discharged from the 4x5-ft. chimney is $478(10,000 \div 60)^2 = 13,277,777$ ft.-lb. per min. Likewise, the energy of the air discharged from the chimney 20 ft. square is $478(500 \div 60)^2 = 33,194$ ft.-lb. per min.

Again, the formula given at the bottom of page 477, Sept. 16 should read, $w = 1.3273 \times 30 \div (460 + 62) = 0.07628$ lb., which gives, for the weight of air contained in the room, $9,900 \times 0.07628 = 755+$ lb.

Coal and Coke News

Washington, D. C.

Hearings were held recently before the Supreme Court of the United States in the Federal Government's antitrust suit against the Reading R.R. interests for alleged monopoly of anthracite coal production and transportation. The Reading case headed a list of specially important litigation advanced for more prompt disposition. The alleged combination is said to have assets of \$500,000,000. Following this case a similar suit against the Lehigh Valley R.R. and constituent interests came up for hearing.

An array of counsel appeared before the court in the Reading arguments. Representing the Government were Attorney General Gregory, Solicitor General Davis, Assistant Attorney General Todd and Thurlow M. Gordon, special assistant. Jackson E. Reynolds, Charles E. Heebner, John J. Johnson, Charles E. Miller and Robert W. De Forest defended the Reading interests.

The suit against the Reading Co., a holding corporation, the Philadelphia & Reading R.R., the Philadelphia & Reading Coal and Iron Co., the Central R.R. of New Jersey, the Lehigh & Wilkes-Barre Coal Co. and others, including George F. Baer and other Reading directors, was begun at Philadelphia in 1913 in the Federal district court. The decision of this lower court was favorable in part only to the Government, in deciding that the holding company's union of the Philadelphia & Reading Coal and Iron Co. and the Lehigh & Wilkes-Barre Coal Co., two of the largest anthracite producers, was a combination in restraint of trade. The lower court rejected the Government's contention that the Reading company itself, with its constituents, was an unlawful combination, or that its carriage and production of coal constituted a violation of the "commodities clause."

An appeal to the Supreme Court the Government sought the separation of the Reading and Central of New Jersey railroads and coal interests, the divorce of transportation and production, the restoration of competition between the Reading and Jersey Central roads, and redistribution of the stock of the Lehigh & Wilkes-Barre Coal Co. The Government contended that the Reading interests control 194,000 acres of coal land, with two billion available tons, or 63 per cent. of the known supply. The defendants replied by denying the control of more than 20 per cent. and declared that their profits have averaged only 18½c. per ton. They also asserted that the Reading and Jersey Central railroads are noncompetitive, and resisted the dissolution remedies sought by the Government.

A Decision Against a Railroad

A decision favorable to the complainant coalmine operator has been entered by the Interstate Commerce Commission in the case of W. Harry Brown against the Vandalia and other railroads. The Commission held that the rates charged by the railroads in this case on coal in carloads from the north switch connection of the complainant's track at Alicia mine, near Brownsville, Penn., with the Monongahela Railway Co.'s tracks to Ashland Harbor, Cleveland, Toledo and Youngstown, Ohio, and Chicago and East St. Louis, Ill., are unduly prejudicial to the extent that they exceed the rates contemporaneously charged by the railroads on like shipments from the Bridgeport mine of the H. C. Frick Coke Co. to the same destinations. The roads were directed to remove this discrimination on or before Dec. 20 next.

In its decision the Commission said:

"In various cases we have approved group rates subject to the condition that they do not result in undue preference or prejudice. An appearance of inequality in rates at group boundaries is necessarily incident to this method of rate making. In establishing such boundaries, however, it is usual and desirable to follow some measure of principle, such as radical or operating distance, competition, character of freight, physical features of a country, or location of transportation lines, but where we find no evidence that any such guide has been used. Coal of the same kind, mined under the same conditions, is delivered to the carrier at substantially the same point, the difference in carrier service being small but apparently in complainant's favor."

Certain Coal Rates Are Suspended

Bright tariffs of the Chesapeake & Ohio R.R. proposing to withdraw the joint rates on bituminous coal in carloads from mines on that road in West Virginia to Brookville, Ky., have been further suspended by the Interstate Commerce Commission from Oct. 13 until Apr. 13. These tariffs were originally suspended from June 15 last but the Commission has not had time wherein to

complete its investigation into the reasonableness of the advances in rates which would result thereby.

For a similar reason the Commission further suspended from Oct. 18 until Apr. 18 next certain coal tariffs of the Great Northern and the Oregon-Washington roads. The present tariff of the Oregon-Washington Railroad and Navigation Co. provides that it will absorb not to exceed \$3 per car from connecting lines on all carload traffic at Spokane, Wash. The suspended tariff of that carrier provides that it will absorb not to exceed \$3 per car of connecting lines' switching charges on coal from Utah or Wyoming. The present switching charge of the Great Northern at Spokane is \$3 per car. The suspended tariff of that carrier provides a proposed switching charge of 2c. per 100 lb., subject to a minimum charge of \$7.50 per car, when tariffs of the connecting lines provide for absorption.

The Commission has ordered a reopening of the case in L. and S. Docket No. 71, involving Kentucky coal and coke rates because the roads have been unable to agree upon divisions, and set the matter for hearing on Nov. 1 next. The divisions fixed by the Commission in the previous case between the Interstate R.R. and the Louisville & Nashville R.R. are not included in this case. The divisions to the Interstate R.R. of rates fixed in this case apply to points served by the carriers which were not parties to the preceding case.

Lake Rate Hearings

A general hearing in the Lake coal rate cases has been set by the Interstate Commerce Commission for Monday, Oct. 23. It will be held at the offices of the Commission before Examiner Marshall. Specifically the cases assigned for hearing on that day are: Lake Cargo Coal Rates; Pittsburgh Coal Operators' Association vs. Pennsylvania and other railroads; Bituminous Coal to Central Freight Association Territory; Kellogg Toasted Corn Flake Co. vs. Michigan Central and other railroads; Jackson Chamber of Commerce vs. Ann Arbor and other railroads; Battle Creek Chamber of Commerce and others vs. the Baltimore & Ohio and other railroads; Carter Car Co. and others vs. the Kanawha & Michigan and other railroads; Grand Rapids Association of Commerce and others vs. the Ann Arbor and other railroads; Jackson Chamber of Commerce vs. Pittsburgh & Lake Erie and other railroads; Battle Creek Chamber of Commerce and others vs. Pennsylvania and other railroads; Carter Car Co. and others vs. Grand Trunk of Canada and other railroads; Sandy Creek Coal Co. vs. Hocking Valley and other railroads; Pittsburgh Vein Operators' Association and others vs. Baltimore & Ohio and other railroads, and the Black Diamond Co. and others vs. the Hocking Valley and other railroads.

HARRISBURG, PENN.

Dependents are awarded compensation in decisions filed on Oct. 13 by Chairman Mackey of the State Workmen's Compensation Board, in two claims presenting unusual features. In both there were refusal to consent to operations and removals from one hospital to another where operations took place.

In the case of John and Annie Csermack, Pittsburgh, against the H. C. Frick Coke Co., the claimants were stepfather and mother and dependent on an employee of the company. The mother refused to permit an operation which was urged and had the man removed to another hospital where an operation took place. It is held that the refusal to consent to an operation does not amount to refusal of medical or surgical attention and does not defeat the right to compensation, the decision saying in one part "There is no obligation on the part of the injured to submit himself to an operation, the result of which is so problematical that his life is at stake."

The second case is that of Christian Sims, of Windber, against the Homer City Coal and Coke Co. The deceased refused an operation and insisted upon being removed to another hospital, where a bone was transplanted. The question was whether the man died as a direct result of the original injury or because of his refusal to be operated upon in the first hospital. The Board holds that the claimant is entitled to compensation saying that there is "no evidence to show that the same result would not have followed an operation earlier in the first hospital."

On Oct. 11 counsel for the workmen's compensation board presided at a meeting of claim agents for employing companies, and representatives of insurance carriers interested in the standardization of the printed forms.

A committee comprising A. M. Fine, of the Delaware & Hudson Co., P. F. O'Neill, assistant general solicitor of the Lehigh Valley Coal Co., W. C. Johnson, of the Lehigh & Wilkes-Barre

Coal Co., P. J. O'Boyle, of the Scranton Coal Co., and H. J. Connolly of the Pennsylvania Coal Co., was named to make suggestions as to the standardization of forms to be used by the employing interests under the act.

At a meeting of the Workmen's Compensation Board held on Oct. 11, to hear appeals from the anthracite region, it was announced that 6,958 disability cases have been reported up to the 7th of October. During that time in this district there have been 333 fatalities of which number 100 were single men and 233 married. Of this number 181 have been disposed of by compensation agreements without delay, with no litigation and without the expenditure of one penny by the dependents. The balance are in the course of adjustment or before the referee for adjudication. The average weekly wage of the 333 men who were killed was \$12.26. Because of the 181 fatal accident cases that have been adjusted there will be paid the sum of \$453,499.08, or an average to the families of each man of \$2,505.51. There were left as a result of these fatalities 481 fatherless children divided among the following nationalities: Polish, 144; American, 96; Lithuanian, 71; Russians, 52; Slavish, 45; Italians, 27; Austrians, 25; Hungarians, 6; Germans, 5; Greeks, 4; English, 4; and Scotch, 2.

In the bituminous coal mines 311 employees were killed up to Oct. 1.

Damages Are Awarded

Damages of \$49,711.29 for unjust discrimination by the Pennsylvania Railroad Co. in the distribution of its coal cars, were awarded the Bulah Coal Co. by a second jury before Judge Dickinson, in the United States District Court of Pennsylvania on Oct. 12. The award is \$15,472 less than the amount allowed the coal company, including interest, by the Interstate Commerce Commission, and \$25,841 less than the total amount claimed by the coal company, including interest from June 28, 1907.

The amount of damages to which the coal company was entitled hinged on what was the reasonable cost of producing coal between June, 1902, and June 1, 1907, the period of the alleged discrimination. The Commerce Commission found that although the reasonable cost was 88c. a ton, the coal company, being deprived of its fair share of coal cars, paid the excessive sum of \$1.22 a ton from 1902 to 1904 and \$1.08 a ton from 1904 to 1907. The railroad company, admitting a shortage of coal cars, producing evidence that the lowest possible cost of production in the first period was \$1.19 a ton, and in the second \$1 a ton.

The Bulah company operated a bituminous mine in Bigler Township, Clearfield County.

The Hillsdale Coal and Coke Co. is also trying to recover from the Pennsylvania Railroad Co. an award of \$35,450.43, made by the Interstate Commerce Commission, for alleged discrimination in the distribution of coal cars. The plaintiff operates bituminous coal mines in Indiana County.

PENNSYLVANIA Anthracite

Larksville—Charging that both Larksville Borough and Plymouth Township assessed and attempted to collect taxes on the same strip of coal property, Ex-Judge B. R. Jones has presented a petition to the court and secured a preliminary injunction against both municipalities and their tax collectors restraining the collection of taxes until it is determined which municipality is entitled to them.

Scranton—Six men were victims of gas explosions in the mines in this city on Oct. 11, while the seventh suffered injuries when a portion of the roof caved in. Four men were victims of premature explosions at the Diamond colliery of the Delaware, Lackawanna & Western R.R. Co. The men were removed to the Moses Taylor Hospital after receiving first-aid treatment at the colliery. They suffered from burns on the body. While inspecting a squeeze in the workings of the Pancoast colliery of the Price-Pancoast Coal Co., Paul Bright, mine foreman, and Andrew Nicholas, an assistant, were painfully burned when their mine lamps set off a pocket of gas.

Forty-one candidates who recently passed the state examinations for mine foremen and assistant mine foremen, were presented with certificates at the exercises held on Oct. 14, at the board of trade rooms. Mine Inspector Jenkins T. Reese, presented the certificates. Joseph Jennings, general manager of the Pennsylvania Coal Co., and W. L. Allen, vice-president and general manager of the Scranton Coal Co., were the speakers of the evening. A banquet followed the issuing of the certificates.

Wilkes-Barre—The Delaware & Hudson Co. will shortly begin extensive stripping operations in

East End which are designed to secure a tract of coal which lies close to the surface. Already steam shovels are driving a new stream bed to carry Coal Brook around the land which is to be stripped, and work will begin at once on changing the course of the sewage system, which now lies in the present bed of the stream. This is being done entirely by the Delaware & Hudson Co. This is a new industry for Wilkes-Barre, for while there have been stripping operations in the vicinity of this city, there are none within the community itself.

The State Attorney-General's Department recently handed down the opinion that candidates for the office of anthracite mine inspector must file a certificate from the examining board with the county commissioner.

Pittston—Power for the new Ewen breaker of the Pennsylvania Coal Co. is now supplied by an electric power house, which was placed in operation recently. The new Ewen breaker had been operating since Jan. 1, 1916, but had secured its electric current from the Lackawanna & Wyoming Valley (Laurel Line) R.R. The Citizens' Electric Illuminating Co., of Pittston, which has a monopoly in the district, began legal action to restrain the railroad from furnishing the current and during the course of the suit the Pennsylvania company proceeded with the erection of a colliery power plant, completing it in time to cut in with its own current on the day after the Supreme Court issued the final restraining order against the Laurel Line. The plant is modern in every respect. It is another step in the plan of the Pennsylvania and Hillside companies to operate entirely by electrical power generated at the collieries.

Tresckow—Members of the Owens family, whose father, Evan Owens, lost his life in No. 9 mine 30 years ago, have hopes of recovering the remains, as the Lehigh & Wilkes-Barre Coal Co. recently drained and reopened the old workings. Mr. Owens lost his life when the bottom of his chamber caved and he was thrown into a flooded chamber underneath.

Sandy Run—Pillars of coal forgotten years ago when the old Buck Mountain veins were worked out at No. 15 colliery of the Upper Lehigh Coal Co. were rediscovered recently by Superintendent Charles Rohlands. He sank a new slope to tap some small veins and extended it into the old gangways, where he made the find which insures continuous work at this plant for some years.

Lansford—The rumor having become current among the men that the Lehigh Coal and Navigation Co. had arranged to pay the dues of union workers in order to secure buttons for the men and thus prevent strikes, the company has come out with a statement flatly denying ever entertaining the idea of such an arrangement.

Bituminous

Dalton—The stable at the Spring Grove mine, operated by Cochran Brothers, near Dalton, burned recently, together with a quantity of hay and several sets of harness. The employees, who were at the mine preparing to start the day's work, formed a fire brigade and succeeded in getting out all of the horses and mules, although some difficulty was encountered in this work. It is stated that a lighted lamp, hung outside the stable, ignited the boards.

Connellsburg—Coke production, combined with coal shipped to byproduct ovens, reached 664,000 tons per week recently, showing a falling off of approximately 15,000 tons of coke and 6,000 tons of coal. This decline was due to a pronounced car shortage, combined with a scarcity of labor to handle the coke. It is only through extraordinary efforts to retain the present complement of men and add to it slightly from time to time that operators are able to keep close to contract requirements in making shipments of either coke or coal. It is said that unless this condition changes, it is certain to result in a chronic shortage of both fuels.

Johnstown—Encouraged by the success of the Cambria County coal operators in installing safety emergency stations at various points, coal operators in Indiana and Fayette counties are planning to install similar stations. The operators of Fayette County have already taken steps to provide stations like those now built in Cambria County.

Johnstown—Local coal operators believe that the tonnage in this mining region will be smaller this year than it was last. Last year 12,000,000 tons were produced in the sixth and twenty-fourth bituminous districts, which embrace this section of Cambria County. Labor troubles and a shortage of cars has held the production down.

Washington—It was reported recently on good authority that the U. S. Steel Corporation has purchased the holdings and operations of the Pittsburgh Coal Co. It is said that the details of this deal have been completed, and that announcement will be made within a few days. The great demand for steel has increased that for coke, and the steel interests are not taking any chances on the fuel supply.

New Kensington—Work on the shaft of the Valley Camp Coal Co. is progressing rapidly. The shaft is now down about 140 ft., and as soon as specifications for the tipple can be prepared, the

contract will be let and the tipple installed. Power for operating the mines has been contracted for with the West Penna Power Co.

Patton—Official announcement was recently made by the Pennsylvania Coal and Coke Corporation, that a new frame tipple with picking platform will be constructed. This tipple will have a capacity of 1,000 tons per day and will be one of the most improved in this section. A similar tipple will be erected at the company's plant at Wyburne, in Clearfield County.

Monongahela—A coal mine which promises to give work to about 50 men within a few weeks has been opened on the Gilmore farm, in the Beaverdam Valley, by the Goshen Ridge Coal Co. The owners of this property are W. K. Moore, John Williams and Alfred A. Dale, all of New Philadelphia.

WEST VIRGINIA

Gary—It is reported that 600 more coke ovens of the U. S. Coal and Coke Co. will be fired shortly. At present this company has in operation about 1,600 ovens. It is also reported that many new dwelling houses will be erected about the operations.

Charleston—River shipments of Kanawha coal will increase shortly. The Kelly's Creek Coal Co. has completed arrangement by which it will ship its products by river to a point near Point Pleasant, on the Ohio side, where an elevating and transferring plant has been completed by the West Virginia Washed Coal Co., at a cost of \$100,000. A car shortage led to the new arrangement, and other companies are said to be arranging to make similar shipments later.

Clarksburg—Owing to a car shortage, operators in this vicinity have been compelled to reduce operation at nearly every plant, and in some instances mines have been temporarily shut down. Not more than 50 per cent. of the number of cars needed to take care of the normal output has been furnished by the railroads.

Sullivan—The companies operating on the Piney extension of the Virginian R.R. are getting ready to ship coal in a few weeks. These include the Leekie-Fire Creek, the Boone Smokeless and the Taylor Collieries companies. All are driving entries, building houses, tipplers, etc.

Welch—The Banker's Pocahontas Coal Co., D. J. F. Strother, president, has leased 1,700 acres of Pocahontas No. 3 and No. 4 coal beds to the Solvay Collieries Co., at Kingston, W. Va. About \$1,000,000 will be spent in developing this property.

Mucklow—The Paint Creek Coal Mining Co. is going ahead with improvements at its mine in this field and a large tonnage is being provided for. This will in part go to the byproduct plant being built at Portsmouth, Ohio.

KENTUCKY

Harlan—The Harlan Coal Mining Co., after a period of experiments with wireless telegraph apparatus, has found the right type to meet its requirements and overcome the "mountain barriers" and other conditions which have to be contended with. On trial installations wireless messages were sent to and received from all parts of the country. Later on the company will make an installation. At this time, however, a telephone company is undertaking an extension which will serve immediate needs.

Coxton—The new schoolhouse of the Harlan Coal Mining Co. is nearing completion and will accommodate 250 pupils. There are at this time 200 children who are listed and who will begin school as soon as the school building is completed. The company is filling its moving-picture theater repeatedly on Sundays with films showing Old Testament stories.

Central City—Operations have been resumed at the Central Coal and Iron Co.'s mines and the rate of output will be increased shortly up to the car supply stage. It is stated that the United Mine Workers of America, who claim to have a contract for two years, will sue the company if they are not permitted to work.

Fleming—The Elk Horn Mining Corporation with operations here, at Haymond and Hemphill, short of mining men for several days, brought in two large transports recently and is now turning out its usual large output of Boone's Fork byproduct coal. The company has been little affected by the car shortage prevalent among most of the operations in the Kentucky and Tennessee fields. All the mines are operating full time.

OHIO

Glouster—Mine No. 23, at Trimble, owned by the Hisylvania Coal Co., E. M. Blower, superintendent, is to be placed in shape for operation at once, according to advices received here. The mine has been idle for about six months. It will employ 60 men.

Cincinnati—The Reliance Coal and Coke Co., of this city, has acquired from D. E. Evans the latter's lease on the Marmet coal properties on Lens Creek, amounting to 2,000 acres. Two operating mines go with the property, as well as advantageous river loading points, according to Vice-President W. E. Minor, of the Reliance company.

Columbus—The Federal litigation, which has extended over a period of about eight years, and which was started to divorce the Hocking Valley Ry. Co. from the Sunday Creek Coal Co., has now been settled. At Cincinnati recently the U. S. Court of Appeals approved the plan of transferring the stocks and bonds of the Buckeye Coal and Railway Co. and the Ohio Land and Railway Co. to J. S. Jones, president of the Sunday Creek Coal Co., at his offered price of \$450,000. These cases are the last of those brought in the Federal courts against the so-called "soft-coal trust." By the decree of the U. S. Court of Appeals J. S. Jones pays \$450,000 for the securities of the two above named concerns, which were subsidiaries of the Hocking Valley Railway Co. The property involved comprised 2,500 shares of the capital stock of the Buckeye Coal and Railway Co., and 2,006 shares of the capital stock of the Ohio Land and Railway Co. The appraisement fixed the value of these securities at \$45,000 for the former and \$379,500 for the latter concern.

St. Clairsville—Prosperity in the mines is making Belmont County school boards face bankruptcy. New schools have had to be opened to care for the influx of children as the mines increased their production.

Crooksville—The new tipple at the Zanesville Coal Co. mine No. 3 has been completed and is much larger and more modern than the old one destroyed by fire when it was struck by lightning a few weeks ago, consequently the possible output of this mine has been greatly increased.

McLuney—The Zanesville Coal Co. is rapidly completing the big twin tipple being erected at its Nos. 6 and No. 7 mines, near McLuney. The three-mile switch leading from the Pennsylvania R.R. to the new mines is completed except a small stretch near the mines, which it is stated can be easily finished by Nov. 1.

New Lexington—The W. A. Gossline mine, near New Lexington, which has been idle for the past two years, is being cleaned up, and it is stated will be in full operation within the next four weeks, giving employment to 250 men.

ILLINOIS

Livingston—On Oct. 7 at the Livingston shaft of the New Staunton Coal Co., of St. Louis, a new record was made for normal working conditions in hoisting 5,287 tons of coal in eight hours. The shaft is 287 ft. deep and the distance from the bottom to the self-dumping tipple is 321 ft. This tonnage was raised in 1,800 trips, or at the average rate of 16 sec. per trip for the eight hours. The mine cars are supposed to hold 3 tons and they actually averaged 5,850 lb. on this record day. It is a two-compartment shaft with the cages run counterbalanced as usual in Illinois practice and a plain slide-valve, direct-motion Litchfield engine is employed, with the hoisting engineer operating an hour at a time in alternation with a relief engineer. This is the mine that has the state record for the largest average daily record for last year, or 4,662 tons in eight hours, in spite of delays in placing and receiving railroad cars required to ship such a large tonnage. This high annual average is even more flattering than the above day's record and speaks much for the efficiency and organization. This mine was opened about ten years ago and the working faces are about a mile distant from the shaft bottom on all four sides. This same company is opening a new mine at Nokomis, Ill., where the coal is about 750 ft. deep and 5-ton cars are employed that are expected to bring up the average daily output to 5,000 tons, or better, when sufficient ground has been opened up.

Belleville—The sale of the Joseph Taylor mine at O'Fallon, Ill., to Edward Yoch, of Belleville, for \$30,000, under receivership, has been confirmed by Circuit Judge Berneuter. Part of the equipment of the Ridge Prairie mine is included in the sale.

Carlerville—One who participates in a mine inspection which results in the conclusion that no dangerous condition exists cannot make the failure of the mine examiner to discover danger a basis for the recovery of damages, according to a decision of the Circuit Judge in the case of Alex Streather against the Superior Coal Co., tried here a few days ago. The plaintiff claimed damages for injuries because the mine examiner had failed to mark a dangerous place in the roof of the mine. The evidence showed that the plaintiff was present when the examination was made and knew of the conclusion of the examiner that no dangerous condition existed. At the conclusion of the plaintiff's evidence the court sustained a motion on the part of the company for the dismissal of the case.

NORTH DAKOTA

Minot—Ira C. Jones has purchased the controlling interest in the McClure Coal Co. and has assumed the management of that concern.

COLORADO

Denver—Prosperity is causing coal production in Colorado to steadily increase. Figures for the first seven months of the year show 6,253,481 tons of coal mined; this is an increase of 1,253,160 tons over the same period of the preceding year.

ARKANSAS

Fair Smith—Clyde H. Finley, former auditor for the Bachelder-Denman Coal Co., and H. P. Hilliard, receiver for the American National Bank, were recently appointed joint receivers for the Bachelder-Denman Coal Co. by Judge Frank A. Youmans of the United States District Court, vice Andrew S. Dowd, former receiver and former cashier of the American National Bank. The bonds of the joint receivers were fixed at \$2,500 each.

OKLAHOMA

Omulgee—Smith & Cline, drilling a test oil well in Section 1-13-12, passed through a 10-ft. bed of good grade coal at a depth of 130 ft. This is a new vein of coal, and its presence at this depth had not been suspected. Surface coal north of this location had been known for some time but mining operations had been limited. There is talk of organizing a company here to mine coal in the newly discovered bed.

Dewar—Twenty-six coal mines are in active operation in the vicinity of Dewar, a town of less than 3,000 population. These mines have been worked at full capacity for several months and the demand for coal is still greater than the output. The mines are only in course of development, there now being employed about 10,000 miners, whose monthly payroll averages about \$1,000,000. The daily output exceeds 3,000 tons of coal.

Foreign News

London, Eng.—The Coal Mining Organization Committee recently reported that the estimated output of the mines in the United Kingdom, for the year ending with July, 1916, amounted to 254,748,000 tons as against 250,368,000 tons in 1915, and 281,135,000 tons in 1914. Approximately 282,000 miners have joined the colors since the outbreak of the war, and 116,900 have been replaced, leaving a net reduction of 165,300 men.

Personals

E. C. Berkeley has been made superintendent for the Winding Gulf Collieries Co., succeeding F. M. Cook.

Ralph G. Wilfong, who has been engineer of the Pemberton Coal and Coke Co., has resigned to accept a position at the Jenkins, Ky., plant of the Consolidation Coal Co.

John McGrath, of Lafayette, Ind., a graduate of Purdue University, has been appointed general superintendent of the byproduct coke plant being constructed at Clairton, by the Clairton Productive Coke Co.

L. L. Heaton, of Panther, W. Va., has resigned his position as superintendent of the Panther Coal Co. Mr. Heaton has been with the Lathrop and Panther coal companies for six years and now desires to make a change. He has not decided what he will take up.

John P. White, international president of the United Mine Workers of America, will tour the bituminous region of Pennsylvania in the near future. He is campaigning for reelection. Mr. White will speak in Dunlop and South Fork, as well as other leading mining towns.

Henry C. Frick, steel magnate and director of many corporations, resigned from the board of the Philadelphia & Reading Railway Co., and also that of the Philadelphia & Reading Coal and Iron Co., at the annual meeting of all companies affiliated with the Reading system. Mr. Frick remained a director of the Reading Co.

James R. Elliott has again joined George S. Batton, civil and mining engineer, to form the firm of Batton & Elliott, civil, mining and consulting engineers, Pittsburgh, Penn., succeeding the firm of George S. Batton & Co. Mr. Elliott returns to Pittsburgh after an absence of ten years in California, Arizona and Utah, where he was engaged in various metal-mining and smelting enterprises. The new firm will specialize in reports and development of mining properties.

Obituary

John W. Taylor, for many years one of the best-known coal men in the Hocking Valley, being superintendent with the Sunday Creek Co. and the Johnson Coal Co., died on Oct. 11 at the age of 62 years, after a long illness. He leaves four surviving children of a family of nine.

Melville L. Cobb, long a prominent factor in the bituminous coal trade in Boston, died at his home in Brookline, Mass., recently, after a short illness. He was born in Dighton, Mass., on Sept. 13, 1853, and was the son of Capt. William Cobb, who was for many years president of the Old Colony Steamboat Co., later merged with the Fall River Line. His active connection with the coal business had continued for about 35 years and his interests were conducted under his own

name, M. L. Cobb. Mr. Cobb was one of the chief distributors in New England of coal from the Reynoldsville, Penn., region, and he also marketed a large tonnage of Pocahontas and New River coal. He leaves a son, Clarence M. Cobb, who has been actively associated with the coal business for several years.

Industrial News

Tamaqua, Penn.—John G. Scott, manufacturer of rope sockets, etc., formerly of Girardville, recently removed to East Broad St., Tamaqua.

Moundsville, W. Va.—The Marble coal block in Clay, Franklin and Meade districts was recently sold at auction to the First National Bank of Cleveland, Ohio, for a consideration of \$25,000.

Philadelphia, Penn.—B. D. Gray was recently elected president of the Hess-Bright Mfg. Co., succeeding F. E. Bright, who remains identified with the company as chairman of the board of directors.

Paducah, Ky.—In a decision handed down here by the Kentucky Railroad Commission it is held that the rate on steam and domestic coal from western Kentucky points into Paducah should not exceed 60c.

Connellsville, Penn.—C. J. Rowe & Bros. have leased the Cook mine, a part of the property of the Somerset Coal Co., near Wellersburg, Somerset County, and will start operations as soon as repairs can be made.

Milwaukee, Wis.—The Nordberg Mfg. Co. announces the appointment of H. W. Dow as sales manager. Mr. Dow has been associated with the Nordberg Mfg. Co. in the engineering and sales departments for 12 years.

Charlestown, W. Va.—C. V. Graham recently reported a lease of 740 acres of coal land on Granny's Creek, Kanawha County, to the Empire Coal Mine Co. The price paid is 7c. per short ton, run-of-mine basis.

Hazard, Ky.—The Columbus Coal Mining Co. has awarded contracts for the erection of an additional 50 miners' houses at Raccoon. The Blue Diamond Coal Co., at Walker's Branch, immediately above Raccoon, will also build 25 houses.

Mauch Chunk, Penn.—The Mauch Chunk Iron Works will soon occupy a new, modern, fireproof plant opposite the Central R.R. of New Jersey station. This change was made necessary in order to take care of rapidly extending business.

Nashville, Tenn.—The Tennessee Railroad Commission has issued an order suspending an advance by the Tennessee Central Railroad in coal rates from mines on its road to Nashville from 70c. per ton to 80c. The advance, which was to have been effective on Oct. 15, is suspended for 30 days.

New York, N. Y.—The sales offices of the Erie Engine Works in New York are now located at 90 West St., where all the New York and export business will be conducted under the management of W. B. Connor, Inc., which firm has been appointed general sales agent for the New York territory.

Youngstown, Ohio—Among Youngstown manufacturers the question of securing an adequate supply of coal is an important consideration at this time. It is asserted that lack of proper transportation facilities is bringing on a coal famine. It is believed that with freezing weather matters will become worse.

Manchester, Tenn.—Manchester is suffering severely from a famine in coal, local dealers having been unable to obtain shipments. The Public Light and Power Co. has laid in a large stock of firewood in expectation of having to use it for fuel, while one of the public schools is now burning wood for heat.

Duryea, Penn.—A verdict was recently returned for \$1,288 in the suit of A. B. Brown against the Pennsylvania Coal Co. The plaintiff sued for damage to building lots caused by culm and water being washed thereon from collieries of the defendant company. The verdict is considered large under the circumstances.

Wheeling, W. Va.—One of the biggest electric shovels ever built has been purchased by the Beech Flats Coal Co., for the coal mine at Rush Run, Ohio. Twelve railroad cars were required to transport this shovel to the mine. The dipper has a capacity of 8 cu.yd., while 350 hp. will be required to operate the machine.

Dover, Del.—A charter has been filed for the Pennsylvania Coal, Iron and Gas Co. The capital stock of this firm is \$1,000,000 and the purpose is to acquire coal lands containing oil, gas and other mineral substances. The incorporators are Herbert E. Latter, Norman D. Coffin and Clement M. Egner, all of Wilmington, Del.

Pittsburgh, Penn.—Trunk-line railroads operating through Ohio are already being obliged to resort to their reserve coal supply, owing to curtailed shipments on account of freight-car shortage. Never before in the history of railroading has it been necessary to resort to such measures as this season of the year, it is asserted.

Philadelphia, Penn.—A cable message has been received here, stating that the steamer "Robert

M. Thompson," towing the barge "J. B. King & Co.," loaded with coal for Havre, France, has been driven into the harbor at Fayal, Azores, for shelter. The coal on the barge will be transshipped and sent to the original destination.

Ebensburg, Penn.—One of the highest prices paid for coal in this district, and one that indicates the value of the fuel, was paid recently when Warren Delano, of Buffington Township, Indiana County, sold 1,000 acres to the Vinton Land Co. The exact price paid for the 1,000 acres was \$294,494.82. The land sold included 11 tracts.

Danville, Ill.—The Big Muddy Coal and Coke Co., of Marion, Ill., has filed a petition in bankruptcy in the United States Court here, placing liabilities at \$169,575 and assets at \$125,000. Inability to obtain a market due to competition is given as the cause for the collapse of the company. No coal has been mined by this firm for over a year.

Charleston, W. Va.—D. T. Evans, of Cincinnati, recently sold the lease taken on the Marmet coal properties on Len's Creek. Some time ago Mr. Evans leased about 2,000 acres of the Marmet properties, together with the West Virginia & Southern R.R. and a river tipple from receiver Schonebaum, in Cincinnati. He recently sold this lease to the Reliance Coal and Coke Co. of Cincinnati.

Birmingham, Ala.—Coal mines operating in the Birmingham district are behind a full month on domestic coal orders on account of the car shortage. The inability of operators to secure adequate transportation facilities has forced some companies to withdraw quotations on coal. Dealers believe that the dearth of coal cars will result in actual suffering in the South with the coming of cold weather.

Chicago, Ill.—The Sullivan Machinery Co. recently announced that Bert B. Brewster, for the past two years manager in Alaska with headquarters at Juneau, has been transferred to Salt Lake City to become manager of the company's branch office at that point, succeeding H. G. Moon, resigned. Walter F. O'Brien, for some time past associated with Mr. Brewster at Juneau, will take his place as local manager for Alaska.

Pittston, Penn.—Acknowledging that he and a companion came here from Philadelphia with the intention of holding up and robbing mine workers on payday, Robert Moran, aged 18, of Richmond, Va., pleaded guilty on Oct. 12, to the charge of highway robbery preferred by Pennsylvania Coal Co. police. Moran's companion escaped during an encounter with Norman Lampman, foreman at the Barnum colliery, who was one of the intended victims of the young men.

Allentown, Penn.—Owing to the scarcity of coke and the difficulty of getting it shipped, there is grave danger that the furnaces in the Lehigh Valley will be compelled to suspend operations. The Crane Iron Works, at Catawissa, is ready to put another furnace in blast, but has barely enough fuel to keep those already lighted in operation. Unless relief comes in the shape of more coke, the Thomas furnaces, at Honkendauqua, will be compelled to shut down, and the other plants in this vicinity are in the same predicament.

Chicago, Ill.—The heavy advances in the prices of retail coal in Chicago are under investigation by the local Federal District Attorney, and a number of coal men, principally retailers, have been asked to explain the cause for recent high prices. Investigators representing the Government have been working in Minneapolis and St. Paul to ascertain the causes of high cost of coal compared with former years. These investigations are welcomed by the coal men, who feel that it cannot do them any harm if they are fairly and thoroughly made.

St. Louis, Mo.—In spite of objections by some of the steamboat people, it has been decided to build the municipal dock on the site originally selected, at the foot of North Market St., but the plans are to be so changed as to provide for six elevators instead of four. These will be large enough to lift a wagon or auto truck to and from the level of boats lying at the dock. After the contract had been awarded to the Hemann Construction Co., the company discovered that it had failed to include in its estimate the cost of a coffer-dam, which may necessitate a new letting.

Birmingham, Ala.—Conferences have recently been held between coal operators and officials of the Illinois Central, Central of Georgia, Alabama Great Southern, Frisco and Louisville & Nashville railroads, with a view of arriving at some means of relieving the car shortage, which has grown worse during the recent past. A number of the larger mines in the district have not operated half-time and Warrior River traffic has been interfered with by inability of operators near the river to secure equipment for the shipment of coal to supply the barges. It is understood that some of the lines have less than 50 per cent. of their equipment on their rails, while others have not over 60 per cent. The Interstate Commerce Commission will probably be appealed to if some relief is not otherwise secured in the near future.

Market Department

GENERAL REVIEW

Slowing up in transportation causing acute anxiety in anthracite at the outside markets. Urgent demand for bituminous forces the biggest price advance yet recorded. Iron and steel industries aggressive buyers. Middle Western producers swamped with orders and prices are a secondary consideration.

Anthracite—A very urgent demand from the more distant markets, such as New England and the West, threatens to precipitate a runaway situation in hard coal. Anxiety at these points increases with the approach of the customary winter slowing up in transportation, and with the railroads already beginning to announce embargoes in some directions, there is a sharp rush to make up deficient stocks. Shipments to the Middle West are meager, while supplies are fast disappearing and substantial premiums are offered. New England is already facing a positive shortage of certain sizes, while deliveries to some of the coast points scheduled for August, are not yet made. More stable conditions prevail in the districts contiguous to the coal regions, but even here the situation is much mixed, some favored dealers claiming full supply, while others are notably short. The very urgent call for stove coal has developed an unprecedented situation on this grade.

Bituminous—In the face of obvious efforts on the part of the sales agencies to minimize the prevailing tense situation in the market, prices during the past week experienced the sharpest advance of the current rise. Erratic conditions mark the situation in all directions. Many industrial plants are running very close on supplies, railroad embargoes are appearing and broadening in scope, abrogation of contracts and threatened suits thereon are becoming more general, while purchases of heavy tonnages of heretofore untried fuels are noted. The situation certainly appears to have portentous possibilities that may develop into a runaway market which will drive prices up to prohibitive levels. We know of one instance where a seller endeavored to rebuy a small tonnage at an advance of 50¢, a ton, 24 hr. after the sale was negotiated. Industrial consumers whose requirements have been substantially increased by extra heavy operations are finding but little free coal in the market and are forced to pay handsome premiums.

Lake Trade—The most impressive advance of the season developed this week in the Pittsburgh district due primarily to heavy buying in the iron and steel industries. These lines are accumulating unprecedented earnings, and have incidentally been falling behind in their fuel requirements; they are naturally not disposed to take any chances in this respect, and, as a result, an aggressive buying movement was precipitated. The car situation becomes steadily more acute as the season advances, and evidence of the heavy demand is clearly seen in the record movement of the leading carriers. The railroad stocks are also apparently below normal, and the roads are buying heavily to make up the deficiency, and even occasionally confiscating coal on their lines. Restrictions concerning car movements are becoming more general; some lines are refusing to permit their equipment to leave their own lines, and this in many cases is making it exceedingly difficult for operators to meet their contract obligations. The Lake shipping continues light, due to the scarcity of coal, and in view of the fact that the current season opened with stocks at the upper ports at an abnormally low level, the outlook is ominous.

Middle West—Buying is heavy, the question of price being a secondary consideration when definite shipments can be assured. The producers are swamped with orders and the deficiency in the supply is becoming steadily more acute. Steam coal prices are at an unprecedented level for this season of the year, and producing interests have shut down absolutely on taking any further orders for domestic grades. The urgency of the demand is being accentuated by the policy of conserving surplus stocks against future emergencies which has been adopted by some of the larger consumers and railroads. The reopening of abandoned mines and the projected development of new properties are further evidences of the confident position of the producing interests. The steadily increasing shortage of Eastern coals in this market is another factor, and we know of one instance where an order for 100 cars at a very good figure has gone begging; Eastern coals are also being further handicapped by embargoes which are restricting shipments into some of the markets in this section.

A Year Ago—Anthracite trade even better than anticipated. Heavy movement of bituminous on contracts. Vessel shortage and improved local conditions cause a slump in exports. Lake market strong. Middle West unusually brisk.

BUSINESS OPINIONS

Iron Age—The appearance of the Allies in this market inquiring for shell steel for the third quarter of 1917 is the latest development in the pre-emption of next year's output. Deliveries on existing contracts extend only to July 1. These latest inquiries confirm steel manufacturers in the opinion that as long as the war lasts export demand for war and other needs will take practically all the steel the United States can supply. Shell makers who have contracts with the United States Government are also sounding the market. Three such inquiries are for 3,750, 6,000 and 3,500 tons. All told, the Government munitions program represents 300,000 tons.

American Wool and Cotton Reporter—The last week did not show as much activity as the previous one, but the demand is still strong on fine wools. More interest is being shown on the medium grades. Sales amounted to 7,000,000 lb. Mill men are becoming more confident and some of the leading interests of the trade bought during the week. An enormous distribution on heavyweight fabrics is predicted by some sellers in the woolen and worsted goods market.

Boston News Bureau—The situation, while fundamentally favorable in the extreme, is one where optimism is held in check because of the possibility of something of an unfavorable nature occurring. People recognize that it is futile to figure on the ending of the war, but they realize that surprises are always in order, and among conservative people this acts like a brake. When one studies carefully the most stimulating factors, he sees them in our remarkable foreign trade balance, in our corraling of foreign gold, and in our increasing domestic trade with rising prices. On the other hand, we see an increasing cost of living, and a persistent demand by labor for higher wages. Bankers admit that while the time will come when money rates will be firmer under the natural order of things, the time is not yet. It looks as if the gold would continue to come here for long time to come. There is an increasing demand for foreign obligations of the allies.

Bradstreet—Trade, as well as industry, continues extraordinarily active, in which respect the situation shows little or no variation from recently preceding weeks. Buying for next spring, while broadening, indicates some conservatism, holiday buying is proceeding apace, retail trade is expanding, prices are still high, labor is scarce, the railways are buying more freely in the steel market, car shortages are growing more serious, earnings are heavy, the leading industries are sold far ahead and pig iron is higher, while there is no let-up to export business, but shipments have been retarded by submarine attacks on shipping on the Atlantic coast. Incidentally, submarine activities also have caused an advance in ocean freight rates, while temporarily affecting prices for wheat and cotton and tending to crimp stock-market price movements.

Dun—All speculative markets experienced reaction this week and legitimate business has temporarily moved under reduced momentum, owing to the holiday interruption and a certain hesitancy due to international developments. Current transactions, however, continue unprecedented for the period and, with the strength of fundamental factors undiminished, the general tendency in trade and industry is still toward further expansion. By rejecting many additional contracts, and under the stimulus of better working conditions, the Steel Corporation has made some headway in relieving the congestion at its mills and factories, though the unfilled orders at the end of September were nearly 80 per cent. greater than in 1915.

Marshall Field & Co.—Wholesale dry goods distribution for the current week continues to maintain the large volume of the past few weeks, and exceeds the same period of a year ago by a considerable margin. Road sales for Spring delivery are heavily in excess of previous years. Customers have been in to market in about equal numbers. Collections have continued strong throughout the week. Prices are firm.

Dry Goods Economist—At the beginning of the week anxiety prevailed, both among importers and among manufacturers as a result of the presence of German naval submarines near our shores. The former were apprehensive lest they might lose goods which are so greatly needed and were impressed with the steep advance in marine insurance rates. The latter considered the effect on the market which might be exerted by the checking of exports. The new possibilities of serious complications between our government and that of the Empire were also recognized. As is apt to be the case with any shock, however, these anxieties eased off later in the week. And to this more optimistic attitude colder weather gave added strength.

Atlantic Seaboard

BOSTON

Supply of Pocahontas and New River still well behind the demand. Slower loading is the rule, and car-supply inadequate. Georges Creek deliveries slightly improved. Active market for Pennsylvania grades at high prices. Anthracite shipments slower than ever.

New England is now so largely dependent on steamer delivery that stocks are not far short of normal as most buyers profited by their experience of a year ago and were much more fore-handed this season than had been their custom. If there is any slump early next year it will be because of the over-buying that has been characteristic this year of many of the larger consumers; had they not bought in excess of their actual requirements they would have been forced into the market long before this. The great value of ample storage is now appreciated and with so large a proportion of New England's tonnage placed on yearly contracts at delivered prices we are not likely again to see the broad wide-open markets of some years ago. In some directions, however, a suspension of deliveries for ten days or a fortnight would see a very decided change.

The Georges Creek shippers, particularly those with coal long overdue on contract, are making slightly better deliveries in this market. The supply at the piers, however, is intermittent and unpredictable. A few barges of their fleet are still being used to load other coals, and this will doubtless be continued until labor and cars are more plentiful. There are no current prices on this grade beyond the regular figures established last March for the contract season.

The Pennsylvania grades are in particularly strong position. An unusually heavy volume is coming to Tidewater and the shippers as a whole were so cautious in the spring about taking on business that most of them are occasionally in shape to offer coal at market figures. The railroads have cooperated to an extent with their barge lines. A large number of retailers who took on a big volume of business on the higher-grade coals and undergone disappointing deliveries are being helped by this.

All-rail movement has gradually slowed up until ten days ago when the first embargoes went into effect. Shipments to the B. & M. through Mechanicville via N. Y. C. or D. & H. are now suspended and other routings are likely to be similarly affected. In consequence, prices f.o.b. mines were bid up to \$3.35 and \$3.50 for the choice grades. Fair-grade steam coals in New York harbor are commanding prices in line with these. Cargoes find a ready sale at \$6@6.25 alongside Boston, with little said as to quality.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

	Clear-fields	Camb. & Som'st	Geo's Creek
Philad'l'a...	\$4.00@4.40	\$4.25@4.50	\$3.07@3.17
New York...	4.30@4.70	4.50@4.85	3.37@3.47
Baltimore...			3.00@3.10
F.o.b. mines	2.75@3.15	3.00@3.35	2.00@2.10

* On contract.

Pocahontas and New River are quoted at \$1.00@4.60 f.o.b. Norfolk and Newport News, Va., and \$6.50@6.75 on cars Boston and Providence for inland delivery.

Anthracite—Stove, egg and broken get increasingly short as the season advances. So serious is the shortage of stove that many of the retailers are frankly saying to their trade that stove is out of the question and that customers must be prepared to take chestnut as a substitute. With some shippers the latter and pea and boiler coal are the only available sizes except in trifling amounts.

Car shortage is becoming as serious a factor in anthracite as in bituminous; it is notably so on shipments to Tidewater. At the loading piers practically every bottom has to wait for the coal to run in, so relatively light is the movement.

Dealers along the coast are still waiting for cargoes they had reason to expect in August. Up the Kennebec and Penobscot Rivers the receipts so far this season have barely reached 60% of the 1915 tonnage, and with but five more weeks that can be relied upon for open water.

Two dollars is about the current premium f.o.b. New York for "independent" coal, assorted sizes. When to this is added the extra marine freight as compared with company rates on their own transportation it is clear that dealers in this territory will not buy more than they are absolutely obliged to.

NEW YORK

Hard coal strong with big premiums on individual coals. Dealers worried over prospects. Bituminous active, but little free coal to be had. Cars short and labor troubles bother producers.

Anthracite—The market continues strong with good demand. Individuals with free coals are getting all the way up to \$1.50 above the company circular on the domestic grades. Some dealers are so short that they have gone to wholesale dealers prepared to pay cash for shipments. They are becoming definitely worried and expect a serious situation this winter.

The scarcity in the West and in New England is especially acute. Buyers are canvassing the mining regions, but most individual operators are sold up for many weeks ahead and orders which would net them larger profits than some already booked are being refused. It is hard to get a shipment of any one of the domestic coals, most orders being shipped consisting of more than one size. The car shortage is becoming more pronounced each week and the mines are experiencing greater difficulty in maintaining even the present restricted working schedules.

Slow shipments of broken coal are complained of. Most of this size is already contracted for. Contract holders see their stocks diminishing because of slow deliveries.

Stove coal continues in the most urgent demand. Quotations have been made at \$7.25 but most of the sales have been at \$7.50. Sales at the mines have been made at \$5.75. Egg coal is a trifle easier but there is little to be had. Tidewater quotations are about the same as for stove but mine quotations are 25c. less. Chestnut is stiff with considerable being shipped to the West where the market is good.

Pea coal is stronger with good grades scarce and practically out of the market. Almost any kind is bringing from 25 to 50c. above company circular. The buckwheat coals are in good standing but not plentiful.

Current quotations, per gross ton, f.o.b. tide-water, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$4.95	
Egg.....	5.45	\$5.45@7.50
Stove.....	5.70	5.70@7.50
Nut.....	5.75	5.75@7.50
Pea.....	4.00	4.00@4.50
Buck.....	2.75	2.75@3.00
Rice.....	2.20	2.10@2.30
Barley.....	1.95	1.90@1.95
Boiler.....	2.20	

Quotations at the upper ports are generally 5c. higher on account of the difference in water freight rates.

Bituminous—There has been no let-up in demand and prices are firm. There was a slight increase in supplies early this week owing to the lack of sailings following the submarine scare but this soon disappeared. Most of the better grades are practically out of the market and the free coals on hand are limited. Buyers from middlemen, as well as from industrial plants are willing to pay handsome prices for quick deliveries.

The scarcity of cars could hardly be worse. Complaints are heard from all sources and no better prospects are being held out. The lack of rolling stock is being felt severely in the coke regions. In addition some operations are being interfered with by strike difficulties.

New York Tidewater prices continue out of line with the mine quotations. While most grades are being quoted at tidewater at from \$4.25 to \$4.50, mine quotations for the same coals were from \$3.10 to \$3.25.

Inquiries regarding export orders are numerous but no actual closing of orders are noted.

Current quotations, per gross ton, f.o.b. Tide-water, for various grades are as follows:

	South Amboy	Port Reading	Mine Price
George Crk.			
Big Vein.	\$4.75@4.85	\$4.75@4.85	\$3.20@3.40
Tyson	4.50@4.60	4.50@4.60	3.00@3.25
Clearfield	4.50@4.75	4.50@4.75	3.00@3.35
South Frk.	4.50@4.85	4.50@4.85	3.00@3.50
Nant Glo.	4.50@4.75	4.50@4.75	3.00@3.35
Som'r Co.	4.35@4.50	4.35@4.50	3.00@3.25
Oneida	4.50@4.75	4.50@4.75	3.00@3.25
W. V. Farm't			
Th'l'qua	4.80@5.05	4.80@5.05	3.10@3.60
Mine-run	4.80@5.05	4.80@5.05	3.10@3.60
West. Md.	4.35@4.60	4.35@4.60	3.00@3.10

BALTIMORE

Bituminous market the most unusual in years. Labor and car shortage and a stiffening of prices that threaten to bring \$4 and \$5 coal before the first of the year. Anthracite steam sizes short.

Bituminous—There can no longer be a doubt that the coal trade is facing the most unusual condition of modern times; a condition which many well-posted coal men believe may develop into a runaway situation that will drive the mine price of soft coals up to \$4 and \$5 a ton. The present winter will certainly not see any material recession from the present high prices and most agencies expect still more sensational rises. With labor shortage in many mines approximately 50 per cent, and with car supply running at times

as low as 20 per cent, in many regions and seldom over 60 per cent., there is small wonder at the constantly tightening price list.

Prices to the trade at the mines are now about as follows:

Georges Creek, Tyson, \$3.50; Somerset, \$3.25; South Fork, \$3.25; Clearfield, \$3.; Quemahoning, \$3.25; Latrobe, \$3.; Freeport, \$3.; Fairmont gas, \$4.; \$3.; mine-run, \$2.85; slack, \$2.75.

Anthracite—Scarcity of all sizes is evident at various periods, and the smaller grades are seldom to be had in the quantities desired. Few dealers are getting more than about 50 per cent. of their orders, and in some cases bonus figures are given to get even this much through.

Exports—Lack of coal at tide is hurting exports. There has been almost a cessation of chartering, coal men being afraid to take chances on delivery at tide, with the prospect of filling out cargoes at ruinous spot prices. The export movement last week dropped to 11,369 tons. Official figures for September show a foreign loading here of 96,680 tons.

PHILADELPHIA

Anthracite short. Big companies taking care of local trade, while individuals seek higher price markets. Car shortage severe. Pea coal orders extremely heavy and steam coal market stiffer. Bituminous shows big price increases. Slack coal especially in demand.

Anthracite—Undoubtedly coal is in short supply locally and it seems the large companies are being called upon to carry the burden. No one will admit charging premium prices for any of their coal, but it is very certain that offers at fancy prices are being received from outside points. The Philadelphia business of the individuals is being neglected; at least that is the impression that is gaining ground, though the companies place the blame on shortage of cars.

Dealers who regularly patronize the large shipping companies but who also favor the smaller shippers with a portion of their business, are now calling upon the former for practically all their requirements. Of course the big companies are distributing their production at circular prices, but they are not able to keep pace with the demand; their coal is being spread over a vast territory, yet each section complains of neglect. Even at that some dealers claim to be receiving all the coal they require and it looks as though the big companies are taking the best care of their best customers. It is such elements as these, few important dealers with all the coal they need and a greater number running from hand to mouth, that make it extremely difficult to gain a proper perspective of the peculiar situation in the coal trade.

The relative demand for the sizes remains about the same as last week. Broken coal is being crushed by the smaller operators because 80% of it as egg, stove and chestnut will bring higher prices. That egg coal is still in demand outside of Philadelphia is shown by the delay in shipping the comparatively small tonnage called for here; at least ten days seem necessary to ship an order even for a few cars only.

The demand for stove goes on unabated. The abnormal call for this size has developed a phase of the coal trade without precedent. Chestnut has grown in popularity so rapidly that now with the limited car supply it is actually short.

Pea is coming here in greater volume than any of the other family sizes. This is probably because the Eastern and Western markets demand so little of it. The orders continue to pour in from all sides and there is an available market for every car. The car supply controls the situation on this grade for it is known that one big company has enough in storage to flood the market if sufficient cars can be secured to move it. Another large company began for the first time this week to apply storage pea coal on its orders.

The steam market gained considerable strength this week; in addition to buckwheat which has been very active for two months past, the smaller sizes are showing activity. There is no doubt that the continued increase in bituminous prices is being reflected in all the anthracite steam grades.

Collections remain in excellent shape, especially with the companies who are not competing for business.

Prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide shipment are as follows:

	Line	Tide	Line	Tide
Broken....	\$3.60	\$4.75	Buck....	\$1.65
Egg....	4.15	5.25	Rice....	1.00
Stove....	4.40	5.60	Boiler....	.90
Nut....	4.50	5.55	Barley....	.75
Pea....	2.80	3.70		1.65

Bituminous—The market this week has shown the largest price increases that have been recorded since the beginning of the present vigorous movement about two months ago. The changes ranged from 25c. up to 55c., this latter increase being recorded in the Fairmont grades. Quotations advanced sharply when it was learned that one of the largest manufacturing plants in Eastern Pennsylvania had gone into the Fairmont region and contracted for from 50,000 to 75,000 tons of coal, the most surprising feature about the purchase being the fact that it is a grade of

fuel never used by them heretofore, which serves to illustrate the seriousness of the situation.

The biggest price advance took place in the slack coals and was due to the poor car supply, not enough cars being delivered to warrant screening coal, and in consequence the market here is very short. One of the freakish sidelights of the present condition is that several times this week it was actually possible to buy coal cheaper at the piers than at the mines. This is something that frequently happens in a rising market and is explained in the present instance by the non-arrival of vessels for loading, with the consequent running up of demurrage charges. The circumstance also that quite a little shipping remained in port owing to the submarine warfare off the coast had some effect by curtailing the quantity of bunker coal required.

There has been no improvement in the car supply over last week and this feature now begins to loom up even more seriously than the labor supply.

All sorts of stories are afloat in regard to the abrogation of contracts which were taken at figures as low as \$1.35@1.45 last spring, and the number of suits likely to result will be considerably more than usually eventuate from a market of this kind.

The railroads still seem to be dissatisfied with the quantity of engine fuel they have ahead and are doing all in their power to accumulate reserve stocks. It is also reported that a few of the local industrial plants are running rather close, but as yet there has been no shut down on this account. Railroad embargoes are beginning to appear and shippers via the Pennsylvania R.R. and New York Central were notified that no consignments could be taken for New England territory via the Boston & Maine.

The following will give a good idea of current prices, per gross ton f.o.b. cars at mines:

Georges Creek, Big Vein.....	\$3.35@3.50
South Fork Miller Vein.....	3.25@3.50
Clearfield (ordinary).....	3.10@3.25
Somerset (ordinary).....	3.10@3.25
West Va. Freeport.....	3.00@3.15
Fairmont gas.....	3.25@3.40
Fairmont gas, mine-run.....	3.15@3.25
Fairmont gas, slack.....	2.90@3.10
Fairmont lump, ordinary.....	3.15@3.25
Fairmont mine-run.....	3.00@3.15
Fairmont slack.....	2.90@3.10

HAMPTON ROADS

Increase in exports but no improvement in receipts. Shortage of cars and labor allow no accumulation coal at Tidewater. Prices firm at recent quotations.

Coastwise shipments for the past week are about the same as the previous period, but exports show some improvement. Practically all shipments are on account of old orders and contracts, few shippers being able to accept any new business, regardless of the attractive prices offered. Stocks are far below normal and it is thought that conditions in this respect will not improve over the balance of the year. It seems impossible to increase the output at the mines, or if this were possible the shortage of cars would restrict shipments. Small sales are reported from time to time on the basis of \$4.50@5 f.o.b., and purchasers are unable to shade these figures; in fact, they are lucky if any coal over that contracted for can be obtained.

Vessels for cargo are meeting with serious delays, and shippers are often forced to shift vessels to the different terminals to finish out cargoes. Bunker demand is about normal for this time of the year but in some instances delays of several days have occurred; this is most unusual as bunker steamers are always given the preference in securing supplies.

Freight rates, both coastwise and foreign, are at about the same level. Allied shipping was held up here for several days by the British Government on account of the German submarine.

Prices are firm as follows: For cargo, both export and coastwise, \$4.50@5 per gross ton f.o.b.; for local consumption, \$4.50@5 per net ton on track; bunker coal, \$5@5.25 per gross ton, plus 10c. per ton trimming.

Railroad Tonnages—The following is a comparative statement of the tonnages handled by the different roads for the weeks ended Oct. 14, 1915-16, and for the first 16 weeks of the last half of the years:

	Week		16 Weeks	
	1915	1916	1915	1916
Nor. & West...	145,236	135,226	2,794,814	2,506,257
Ches. & Ohio...	66,361	84,381	1,472,618	1,485,438
Virginian....	54,964	.....	1,069,261	.....
Total.....	266,561	.....	5,336,693	.....

PANAMA CANAL

Fuel movement through the canal for the week ended Sept. 23 was as follows:

Vessel	From	To	Tons
Florentino	Newport News	Chile	5,189
Almora	Baltimore	Coquimbo	*5,346
Carlos	Norfolk	Mejillones	3,391

*Coal and coke.

Ocean Shipping

VESSEL CLEARANCES

The following vessels have cleared with coal cargoes during the past week:

Vessel	Destination	Tons
Charles Racine*	Pernambuco	2,535
Guahyba*	Pernambuco	2,095
Meranek*	Batavia, Java	7,929
Achilles*	Cristobal, C. Z.	12,041
Favell*	Ibucuy, Argentina	2,218
Southern*	Bahia Blanca, A. R.	7,404
Auchenecrag*	Rio de Janeiro	5,509
George W. Elder*	Saint Georges	1,511
Sif*	Genoa, Italy	1,318
Saint Theodore*	Genoa, Italy	7,470
Tordenskjold*	St. Lucia, B. W. I.	5,424
Santa Clara*	Santiago, Cuba	3,544
Pensiero*	Naples, Italy	3,348
Sirasa*	La Plata, A. R.	2,853
Peter H. Crowell*	Rio de Janeiro	3,628
Ruth E. Merrill*	Alicante, Spain	4,120
Angola*	Lisbon, Portugal	5,884
Tabor*	Havana, Cuba	5,543
Francis*	Para, Brazil	1,604
Selene*	Italy—Any port	5,324
Admiral Sebree*	Mejillones, Chile	2,664
Cento*	La Plata, A. R.	5,262
Carmen*	Italy—Any port	7,150

NEWPORT NEWS

Ruth B. Cobb*	Point a Pitre	885
Circe*	Italy—Any port	3,642
Munro*	Havana, Cuba	4,870
Fjell*	Sagua, Cuba	924
Florence Thurlow*	Arroyo, Porto Rico	688
Florence Thurlow*	Santa Isabel	700
Negus*	Saint Lucia, B. W. I.	2,121
Negus*	Port of Spain	1,356
Negus*	Guanoco, Venezuela	511
Eddie**	Frey Bentos, Uruguay	3,134

PHILADELPHIA

Tallae	Mexico	1,103
Lodaner	Havana	2,106
Chas. K. Schull	Martinique	1,300

BALTIMORE

Australian Transport	Ecuador	3,037
Pax	France	2,283
Tremeadow	Argentina	5,079
Juan	Honduras	970

* Pocahontas Fuel Co. * Berwind-White Co.
Castner Curran & Bullitt. * Baker-Whitley Co.
Smokeless Fuel Co. * Clinchfield Fuel Co.
C. & O. Coal & Coke Co. * C. H. Sprague & Son.
* C. G. Blake Co. * Flat Top Fuel Co.
** C. & O. Coal Agency Co.

OCEAN FREIGHTS

Among the recent charters for export coal are the steamers "Minnesota," 9,000 tons, 10 per cent., reported at \$11.75 net, Virginia to Rio, October; "Tampico," 3,500 tons, 10 per cent., reported at \$9 net, Virginia to Para, October, and the "Corinthia," 5,000 tons, 10 per cent., chartered at \$11.50 net, Rio, option Santos at \$12. Nov. 10 to 30, Baltimore or Philadelphia loading.

There has been very little change in the freight market, and we would quote freight rates by steamer as follows:

	Oct. 9	Oct. 16
West Coast Italy....	\$26.40@27.60	\$26.40@27.60
Marseilles.....	24.00@25.20	24.00@25.20
Barcelona**....	21.60 about	21.60 about
Montevideo.....	13.20 about	13.20 about
Buenos Aires.....	13.20 about	13.20 about
Rosario.....	14.40 about	14.40 about
Rio Janeiro.....	12.00 about	11.50 about
Santos.....	12.50 about	12.00 about
Chile (good port)....	8.50 about	9.00 about
Havana.....	3.50@4.00	3.50@4.00
Cardenas, Saguia.....	5.00 about	5.00 about
Cienfuegos.....	4.50@5.00	4.50@5.00
Port au Spain.....	6.00@6.50	6.00@6.50
St. Lucia.....	6.00@6.50	6.00@6.50
St. Thomas.....	5.50 about	5.50 about
Barbados.....	6.00@6.50	6.00@6.50
Kingston.....	4.50 about	4.50@5.00
Curacao ¹	5.50 about	5.50@6.00
Santiago.....	4.50@5.00	4.50@5.00
Guantanamo.....	4.50@5.00	4.50@5.00
Bermuda.....	4.50@4.75	4.50@4.75
Vera Cruz.....	5.50 about	5.50 a ¹ out
Tampico.....	5.50 about	5.50 about

* Spanish dues for account of cargo. ¹ And p.c.
* Other good Spanish port.

W. W. Battie & Co.'s Coal Trade Freight Report.

Note—Charters for Italy, France and Spain read:
"Lay days to commence on steamer's arrival at or off port of discharge."

COASTWISE FREIGHTS

From Hampton Roads there are practically no charters at all, so short is the supply of coal for spot delivery. Most of the factors here are covered at season rates, and the shippers are not encouraging them to charter extra tonnage. It is difficult therefore to quote freights from Norfolk; \$1.65@1.75 may still be mentioned as the range where the boat seeks the freight but were

the position reversed \$2 would doubtless be the figure; \$1.75 is rumored from Philadelphia to Boston and \$1.50 remains the Reading barge rate on bituminous to Boston points; \$1.35 is the top figure for barges to New Bedford from New York. The demand is constant and is likely to continue so; \$2.50 has again been paid to Bar Harbor, Maine.

OCEAN CHARTERS

Coal charters have been reported as follows during the past week:

PHILADELPHIA

Vessel	Destination	Tons	Rate
Lodaner	Havana	2,106	
W. E. Litchfield	Newfoundland	472	\$2.50
A. H. Willis	Porto Rico	487	
Annie	Porto Rico	512	
Hermod	Martinique		
Absalom	Cienfuegos	1,353	

NEW YORK

BALTIMORE

Vessel	Destination	Tons	Rate
H. de Payens	Marecoies	343	
Vessel	Destination	Tons	Rate
Juan	Honduras	841	
H. G. Foss	Porto Plata	747	7.00
	Bocas del Toro		
Rio Janeiro	Rio Janeiro	2,359	*11.50

VIRGINIA

Vessel	Destination	Tons	Rate
Tampico	River Plata	1,451	9.00
Minnesotan	Rio Janeiro	4,067	11.75
Sverre	Rio Janeiro		
G. W. Elder	Bermuda	1,224	
Mafalda	Brazil	1,334	
Waltham	San Juan	449	*25.75
M. N. Cobb	Sanchez	360	7.00

¹ Basis \$11 to Buenos Aires. ² And port charges. ³ Or River Plata. ⁴ Option to Santos \$12.

Lake Markets

PITTSBURGH

Sharpest advance in the history of the trade. Cars everywhere short and steel mills bid up prices.

What is probably the sharpest advance in the Pittsburgh coal trade has occurred in the past week or ten days. At this writing excited buyers are scouring the market for spot coal at \$3.25 per net ton for steam and \$3.75 for gas coal. Within a couple of days prices may be much higher, and again they may be lower, as it is simply a case of necessity from day to day.

The advances of the past few weeks, until very recently, have been attributable almost wholly to the demand from the East and it was remarkable that so broad a market should advance so sharply. A new condition has lately arisen as to the Pittsburgh district. Car shortages have been greatly accentuated in practically all districts, but Ohio is suffering even more than the Pittsburgh district and there are more consumers short of deliveries on their contracts.

Many of the steel works are short 15 or 20% and they have been turning to Pittsburgh. Their profits are unprecedented and when restriction of output threatens there is no limit to the prices they can afford to pay. While there are rumors of lower prices done in the past few days than mentioned above, and also some reports of higher prices, a careful canvass of the situation shows that at this writing the market for spot coal, and in the circumstances no one is interested in anything else, is about \$3.25 for the ordinary grades of steam coal and \$3.75 for good gas coal, with slack at \$2.75@3.

Car supplies in the Pittsburgh district have been rapidly growing poorer. Many mines had no cars at all two or three days last week, without full supplies on the other days, and all mines suffered more or less. Supplies were better at the opening of this week but that is almost invariably the experience, and a more acute scarcity than ever is feared by the end of the week.

No trustworthy estimate of production can be made, but it would appear that production is averaging more than a fourth less than it was at the highest rate earlier in the year. Labor shortages are forgotten as with so many interruptions to operations the men are eager to work on the days on which there are cars. It is no longer a case of the men making as much money as they thought necessary and then laying off. We quote spot coal as follows: Slack, \$2.75@3; mine-run, \$3.25@3.75; 3/4-in., \$3.35@3.85; 1 1/4-in., \$3.45@3.95, per net ton at mine. Pittsburgh district.

BUFFALO

Excited bituminous market. Many fictitious prices due to car shortages. Anthracite scarce as ever. Demand heavy.

Bituminous—The market is in a chaotic state. Every jobber is eagerly in quest of coal, but afraid to sell any unless it is actually in transit. As a rule the consumers are not much disturbed, for they are holding ample contracts and do not become anxious until their contracts are not filled promptly. All prices are strong and there are reports of very high figures, such

as \$3.50 for slack at the mines, but it does not appear that much coal has been sold at more than \$1 over contract prices.

It will be impossible to make quotations at present that mean much. Buffalo, for instance, is not paying to within 50 to 75c. of the highest prices reported and a great part of everything moving sells on spring contract, which is based on the following schedule:

	Allegheny Valley	Penn
Lump.....	\$2.95	\$2.75
Three-quarter.....	2.85	2.60
Mine run.....	2.75	2.50
Slack.....	2.40	2.30

Prices are per net ton except east of Rochester and Kingston, Ont., where they are per gross ton.

To these prices must now be added at least \$1 for all spot sales and in some cases \$1.50 is obtained. Allegheny Valley and No. 8 sell close to Pittsburgh prices, if prompt shipments can be made, which is not often.

Anthracite—The demand is heavy and the supply short. Shippers are doing what they can to stave off complaint by giving out a car here and another there and they expect to be obliged to do this for a long time. The summer trade was unusually light, but the fall demand set in early, so that retailers' books often show larger sales than for the same time last fall. Just now the all-rail movement West is heavy, so that it has cut down Lake shipments materially. With more coal going out from the upper-lake docks than is coming in there is reason for fearing a shortage.

Shipments by Lake are only fair, being for the week 86,750 net tons, of which 27,100 tons cleared for Chicago, 11,200 tons for Milwaukee, and 41,100 tons for Duluth and Superior.

The strength of the anthracite market is shown by the already large premiums paid for independent coal. At first only a few cents was obtained, then an advance to \$1 was made and now jobbers say that they are obliged to raise it above \$1.50 to cut off orders.

The regular circular remains as follows:

Grate.....	\$5.85	Chestnut.....	\$6.35
Stove.....	6.10	Pea.....	5.00
Egg.....	6.10	Buckwheat.....	3.50

Prices are all f.o.b. cars, with 25c. per ton additional for delivering on board vessel.

DETROIT

Steam coal supply short. Domestic stock, also difficult to obtain. Lake shipments remain at low volume.

Bituminous—Jobbers and wholesalers in the local market are finding it very difficult to provide sufficient steam coal for their customers. Not very much coal is obtainable and when some is found, cars are not always at hand to move it. Nut, pea and slack is in strongest demand and while prices on this as well as other sizes are rather uncertain, mine quotations around \$2 are reported. Mine-run is quoted at about \$2.40 and three-quarter lump in the neighborhood of \$2.60 or \$2.75, mine price.

With demand made more urgent by frosty nights, domestic coal, also, is scarce. Very little smokeless coal is being shipped to the local market. Hocking domestic lump, Jackson Hill domestic lump and West Virginia lump carry quotations of \$2.75@3 at the mines.

Anthracite—Retail dealers are trying to make their stocks of anthracite go as far as possible and some of them are filling orders only in part. Stove size appears to be especially scarce. Some of the wholesalers say premiums as high as \$1.50 a ton are being offered for prompt delivery on either of the three principal domestic sizes. The shortage of cars is reducing the volume of shipments and receipts are further curtailed by embargoes on the Grand Trunk railway between Buffalo and Detroit.

Lake Trade—No improvement is apparent in the movement of coal to Lake ports. The quantity arriving is insufficient to provide cargoes for a number of freighters which have carrying contracts running through the season and from the present outlook shipments in October will fall short of those last month. The shortage of coal is making vessel capacity more readily obtainable for shipments not covered by contracts and cargoes for Lake Superior ports are being taken at the rates fixed in contracts closed last spring. Coal destined for docks on Lake Michigan, however, is still paying rates much in advance of last season.

CLEVELAND

Car supply growing smaller. Railroads buying and confiscating heavy tonnages. Operators the keenest bidders for spot shipments. Dock operators in Northwest expect serious shortage the coming winter.

The car supply is growing smaller and while the operators always look forward to a shortage of gondolas in the fall, they and the railroads can not account for the shortage of hopper equipment.

According to actual figures the railroads all over the country have less coal on hand than any previous year at this period and they are buying and confiscating heavy tonnages. Rail-

roads buying from Ohio operators, other than the initial carriers, are endeavoring to place as many of their own cars as possible for loading and these cars count against each mine's proportion of empties allotted them. As a result the operators who have these orders are not securing enough system cars to even ship a fair percentage of their contract business, and as a consequence they are the keenest bidders for spot shipments.

Prices are still climbing and where the operators looked for \$2 mine-run one month ago they are now anticipating \$4 and this is not an impossible price. It has been reported that several industrial plants operating on a very small margin of profit will have to shut down because of the high prices for coal. A great many small steam users in Cleveland are installing electrical power, and oil burners are being put in a large salt plant.

Coarse coals are increasing more rapidly than slack although slack still remains a steady advance. It is impossible to predict how high prices will go or how long this abnormal market is to continue. Heretofore the prices f.o.b. Cleveland have always been a trifle under out-of-town prices, but today the local buyers are paying just as much as the Eastern or Western consumers.

Coal shipments to the head of the Lakes during the month of September amounted to approximately 200,000 tons more than in the same month last year. This is about the proportion of increase that has obtained all year and in view of the fact that shipments have not been as large as expected and that the coal docks started out with a serious shortage last spring, stocks on hand at present are considerably short of what they should be. Dock operators believe that this condition portends a coal shortage, if not a famine, for most of the Northwest during the coming winter.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8.....	\$3.75	\$3.50	\$3.40
Cambridge.....	3.75	3.50	3.40
Middle Dist.....	3.65	3.40	3.30

No quotations can be made on Hocking, Youghiogheny, Pittsburgh, Pocahontas and Fairmont grades.

COLUMBUS

Higher prices and an increasing car shortage.

Demand for all grades of coal has increased. Everyone is clamoring for coal and shippers are unable to satisfy the demand. What coal can be delivered promptly is sold for almost any price the shipper demands. The prospects for the future are for a continuation of the runaway market and still higher levels.

Retail trade is probably the strongest feature as dealers' stocks are quite low especially in the rural sections. Householders are demanding that their winter's supply be put in and dealers are unable to comply. Retail prices have been advanced 2c. on the ton. Pocahontas lump is now \$5.50; Thacker, \$4.75; splints, \$4.50; Hocking lump, \$4.25. Anthracite prices are also strong and there is a good demand for both chestnut and egg.

Steam business is active as all consumers are asking for more coal. Public service corporations are paying fancy prices for immediate shipment, railroads are taking quite a good tonnage and iron and steel plants are buying heavily. Free steam sizes can be sold for almost any figure. There are practically no surpluses and all plants are depending on current shipments.

A good tonnage is still being shipped to the Northwest, via the Lakes. The Hocking Valley and C. H. & D. docks at Toledo have been very busy during the past week. The car shortage is interfering with the Lake trade to a marked degree. The supply on the Hocking Valley has not been up to par, although it is the best-equipped road in this section. Eastern Ohio roads are only supplying about 40 per cent. of requirements. Pomeroy Bend district is producing about 60 per cent. of normal.

Prices on short tons, f.o.b. mines, are as follows:

	Hock-	Pom-	Eastern
	ing	eroy	Ohio
Reseamed lump.....	\$3.00	\$3.25	...
Inch and a quarter.....	2.85	3.15	\$3.00
Three-quarter inch.....	2.75	3.00	3.00
Nut.....	2.50	3.00	2.80
Egg.....	2.50	3.00	...
Mine run.....	2.65	3.00	2.50
Nut, pea and slack.....	2.50	2.50	2.75
Coarse slack.....	2.30	2.40	2.50

CINCINNATI

Record prices prevail in all departments, with an increasingly heavy demand. No improvement in the car situation, which is now the principal factor at the mines.

The situation in the coal market here is the strongest in the history of the trade. Prices on all grades and varieties of coal are approaching record levels, and the demand is growing more urgent every day, without references to prices. The fact that some of the flooded West Virginia districts are still unable to resume operations has to a certain extent been without effect, as the cars they would have used go elsewhere, and the car shortage is now the biggest

factor in the situation. The record loadings of the railroads indicate that the cars available are being used to the best advantage, and the strength of the market is therefore obviously due to a remarkably heavy demand.

Nut and slack of the better grades is selling at \$2@2.25 per short ton f.o.b. mines, with mine-run at \$2.50 and four-inch lump at \$3. Still further increases are in sight as the weather is becoming colder and stocks in the hands of consumers and dealers are still far from what they should be. The coming months are certain to see the biggest coal market this section has ever experienced.

LOUISVILLE

Car and labor shortages more acute. Eastern Kentucky block reaches \$3 level. Situation virtually unprecedented and general apprehension increasing.

What is described as the worst condition in the history of the Kentucky coal fields is being experienced. The car and labor shortage is unprecedented. Fewer cars were delivered to Eastern Kentucky points than at any time on record except during the one week last summer when cloudbursts were responsible for an abnormal condition. Prices are higher than ever before, with the possible exception of a decade ago, during the strike of the Southern Railway employees.

Parallel conditions to those reported in the Eastern Kentucky field are also noted in Western Kentucky, where operators speak of the car shortage as becoming more and more serious. Wholly unprecedented prices are being realized in this field and operators in circular letters are basing their prices on \$2 for lump, f.o.b. the mines.

Prices may be quoted as follows: Eastern Kentucky, block, \$2.75@3; mine-run, \$2@2.25; nut and slack, \$1.60@2. Western Kentucky prices are: Lump, \$2; mine-run, \$1.50; nut, \$1.50; nut and slack, \$1.

BIRMINGHAM, ALA.

Market very strong. Car shortage grows more acute and production seriously handicapped.

The market continues exceedingly strong with prices on about the same basis as a week ago. The supply of all grades of spot coal is limited and inquiries received from Southern territory are far in excess of the surplus. No steam coal can be had for less than \$2@2.50 at the mines. Inquiries have been received during the past week from dealers in Louisville and Richmond for all grades of steam coal, but Alabama operators are unable to supply the demand from their own territory, even if equipment was available for the outside business. The past week of mild weather has slackened the demand slightly for domestic coal but more business is still being offered than can be booked for delivery prior to November.

The car situation is growing worse and with ample business on hand to warrant full-time operations for some time to come, the operators are becoming much exasperated. Outside of the immediate Birmingham territory, shortage of labor and miners is being felt, which is partially due to inability of operators to run their mines regularly.

Coke

CONNELLSVILLE

Negotiations speeding up on spot furnace coke. Considerable car scarcity. Contract market nominal largely.

At the opening of the week spot furnace coke sold at \$5 with one sale at \$5.25, and predictions were made that \$6 would be reached before the end of the week. An Eastern consumer who last week had bought ten cars a day for the balance of the year at \$4.50 was inquiring for 10 cars of spot and bid \$5. A strong market Monday is unusual as consumers usually aim to square accounts at the end of the week, and Monday generally brings a good car supply.

Just how scarce coke is it is difficult to determine, but it cannot be seen that there is any great change. One change that seems to have occurred is that furnacemen are less conservative in bidding higher prices. It is a fact, however, that cars are scarcer than a week ago. In the coal industry there is an acute scarcity of cars and prices are bid for coal that would give Connellsville operators more profit in selling coal at prices bid than in selling coke at \$5, but as a rule it is impossible to secure extra cars for coal, as the coke operators do not have allotments.

The sharp advance in spot coke has caused most negotiations as to contract to be suspended. Buyers naturally feel that this is a poor time in which to buy while sellers become reserved. There are rumors that \$3.50 and even \$3.75 has been paid on first half contracts, and \$4 seems to be the minimum asking price, but in the circumstances it is to be doubted whether there is a regular contract market, and the market may be quoted nominal at the last authenticated sale. Foundry coke has been in no particular demand, but sellers have been putting up asking prices as they learn of higher and higher prices being paid for furnace. We quote: Spot furnace, \$5; contract, nominal, \$3.25; spot foundry, \$5; contract, \$3.50@3.75, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Oct. 7 at 416,126 tons, a decrease of 3,762 tons, and shipments at 415,328 tons, a decrease of 5,868 tons.

Buffalo—Car shortage, added to the scarcity of men has advanced prices again. It is a difficult matter to get orders filled at any of the ovens and the stringency is likely to last sometime. Quotations are \$6.85 for best 72-hr. Connellsville foundry, \$6.35 for 48-hr. furnace, \$6.35 for high sulphur and \$6.10 for stock coke.

Baltimore—Although some consumers here are holding off under the belief that the present high market is a stampede affair, many others are showing feverish activity to get in. A large dealer here professed to have seen a contract over the first half of the year at \$5 for Connellsville foundry, and to have known of an emergency price paid for immediate delivery of over \$7. While these may be exceptional, there is no doubt that very high prices are being quoted.

Chicago—Free coke is a scarce article. By-product sizes have sold as high as \$6.25, and buyers are quite willing to pay premiums for immediate deliveries. Nominal prices per short ton f.o.b. cars Chicago are as follows:

Connellsville	\$6.00@6.25
Wise County	6.00@6.25
Byproduct foundry	6.00@6.25
Byproduct domestic	5.50@5.75
Gas house	5.50@5.60

Birmingham, Ala.—The foundry and furnace coke market is strong, but there has been no increase in the supply of spot coke. Good foundry coke is easily disposed of at \$5@5.25 ovens and furnace coke at \$3.35@3.50 ovens. Inquiries have been received from numerous points in foreign territory but the limited supply of spot coke and the shortage of equipment precludes the possibility of booking much of this business.

Middle Western

GENERAL REVIEW

Western coals advance to new high levels. Shortage of Eastern grades becomes more acute. Good premiums paid for spot offerings. Heavy orders for anthracite.

The deficiency in the coal supply is becoming more acute. Retailers throughout the Western country are buying heavily, and it does not seem to be so much a matter of price when definite shipments can be assured. Colder weather this week caused a tremendous influx of unsolicited orders, which are only taken subject to delay and at prices current at time of shipment.

Dealers' stocks are still quite short, and the procrastination of the retailer and consuming public during the summer is impossible to overcome at this time. Western markets are bare of spot coal, and comparatively little free tonnage is reaching distributing centers. Here and there a car of free coal is snapped up at new high figures. The domestic demand continues heavy and the larger Western companies are soliciting no future orders on domestic sizes.

The car situation has not bettered, and railroad officials hold out no hope for improvement. Steam coals are still in excellent demand. Never before at this season of the year have prices on steam coal been as high as at the present time. The running time of western mines is down to three or four days a week, and generally they are not full days. The movement is prompt, the railroads making particular efforts to give quick transportation in order to conserve the car supply.

Prices on all grades of bituminous coal are at spectacularly high levels. Retailers and jobbers are seeking car numbers covering shipments in transit for their account rather than looking for definite prices. A great many large steam users and railroads are conserving their storage piles as a reserve for protection against a more serious shortage which is generally anticipated when winter weather is in full swing. The weather from now on will naturally have more or less influence on the market, but the basic conditions are such as to insure a brisk demand for the balance of the season at least.

Receipts at the head of the Lakes this season up to Oct. 1 show an increase of about 2,000,000 tons, but there is a shortage in anthracite of 250,000 tons. It is difficult to predict whether there will be a shortage or an even break when navigation closes, the outcome being dependent upon the car and labor supply at the mines. In case of a severe winter in the Northwestern States and a shortage of coal, the interior will suffer severely.

CHICAGO

Prices advancing with orders unfilled. Some excited buying. Car shortage more acute. Dearth of Eastern coals.

Franklin County mines are sold up for several weeks ahead, and daily orders received by mail equal the capacity of the mines. Small lots of free lump, egg and No. 1 nut are selling as high as \$2.50 per ton, but a number of the large producers are refusing to quote on the coarse sizes. Williamson County mines have been extremely short of cars, and some of the Iron Mountain mines have only worked two days per week. A

scarcity of Eastern coals has enabled some Illinois and Indiana producers to temporarily place steam coals at good prices in Michigan.

Central Illinois screenings have been easier but will undoubtedly be stronger now that the new rate is in effect to Omaha. Domestic sizes are very strong, prices ranging from \$1.85 to \$2. Domestic lump and egg from the Peoria district have been sold as high as \$2.

Producers of Fourth Vein Indiana domestic sizes have again advanced their price 25c. and are declining orders even at this high figure. Shortage of Eastern coals in territory supplied by Indiana mines has given the Fourth Vein operators plenty of orders, Nos. 5 and 6 mine-run being sold as high as \$1.50 and screenings averaging from \$1 to \$1.25. All Knox County grades are commanding a premium.

The enormous demand for smokeless sizes elsewhere is restricting the tonnage to these markets, with the result that lump and egg are quoted as high as \$3.50, with only a car here and there available. An order for 100 cars of coal from Wisconsin offered at over the \$3 mark has had no takers. Mine-run is quoted at \$3. The uncertainty of supply will no doubt cause much higher prices to be quoted with the advent of colder weather.

Kentucky grades are sharing in the general advance, and when any free coal is offered it is eagerly snapped up. Car supply in the Kentucky mining district is in a deplorable state. Some grades of Kentucky coarse coal are entirely out of the market, while other domestic sizes are offered at from \$2.75 to \$3.25. Embargoes placed by the railroads refusing to furnish cars for shipment West of Chicago has complicated the Kentucky situation. Very little Hocking and Splint is being shipped West.

Shipments of anthracite to Western points are meager and the stocks are rapidly disappearing under the influx of heavy orders. The major companies are holding firm to circular prices, while independents are not able to supply any coal at the premiums they could obtain. Some Pennsylvania operators have notified western representatives that they can only ship hopper bottom half-sized cars and many dealers are glad to get them. Major producers are refusing to accept orders from new customers and jobbers with any free tonnage are receiving big premiums for immediate deliveries.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars mines:

	Wilms. and Frank. Cos.	Springfield	Sulliv. an Co.	Clinton	Green and Knox Cos.
Lump	\$2.25@2.50	\$1.95@2.00	\$2.00@2.15	\$1.85@2.25	\$2.25
Steam lump	1.75	1.50@1.60	1.60@1.65	1.50@1.75	1.40@1.50
2½ and 3-in. lump			1.90@2.00	1.85@2.00	2.00
1½-in. lump			1.50@1.60	1.45@1.60	
Egg	2.25@2.50	1.75@2.00	1.65@1.75	1.65@1.75	1.80@1.90
Nut		1.75@1.90	1.40@1.50	1.35@1.50	1.60
No. 1 washed	2.00@2.25				
No. 2 washed	1.85				
No. 1 nut	2.25@2.50				
No. 2 nut	1.75@1.85				
Mine-run	1.45@1.50	1.30@1.35	1.25@1.35	1.35@1.40	1.25@1.35
Screenings	1.00@1.25	.85@.95	.85@.95	.90@1.10	1.00@1.05
Saline and Harrisburg					
Lump	\$2.00@2.25	\$2.75@3.50	\$3.25@3.50	\$3.00@3.25	
1½-in. lump	1.55@1.75				
Egg	2.00@2.25	2.50@2.80	3.25@3.50	3.00@3.25	
Nut	2.00@2.25		3.00	2.75	
No. 1 washed	2.00@2.25	2.00@2.50			
No. 2 washed	1.75@1.85				
Mine-run	1.40@1.50	1.50@1.75	2.75@3.00	2.50@2.75	
Screenings	.95@1.05	1.25@1.35			
Hocking lump, \$2.75, Kanawha splint, \$2.25@ 2.40.					

ST. LOUIS

Heavy domestic demand in spite of mild weather. Illinois coals being shipped into Ohio. Car shortage continues acute.

Mild weather has continued throughout the month and some operators have been afraid that the domestic demand might let up but their fears seem to be groundless as the demand continues unabated. Owing to the poor car supply, tonnage has been so light that dealers have been unable to accumulate any stocks. As a general rule, the dealers have only filled the most urgent orders.

Owing to the great shortage of Eastern coals, Illinois grades are going to the Northwest in great quantities. The Eastern shortage is so acute that Illinois operators are shipping coal east into Indiana and even into the State of Ohio, something that has not happened in years. The demand for steam coal is excessive and a great many mines are now turning to mine-run coal at very attractive figures. Screenings, mine-run and all steam sizes are rapidly advancing in price and the domestic prices are being rigidly maintained.

The car supply on several roads has improved slightly. About three days a week is the average for the State of Illinois. The C. B. & Q. is an exception to the rule as they are giving their mines about 100% supply.

Anthracite coal is practically off of the market although some few shipments are being made in hopper bottom cars. Coke is largely taking its place and the coke men are all doing a tremendous business. Prices on some grades of domestic coke have advanced as much as \$1 a ton in the last few weeks.

The market is quotable on the following basis per net ton, f.o.b. mines:

Franklin County	W'mson	Staun. and Stand. Mont.	Stand. ard
6-in. lump	\$2.25	\$2.25	\$1.85
6x3-in. egg	2.25	2.25	1.85
3x2-in. nut	2.25	2.25	1.85
No. 2 nut	1.75	1.75	1.50
No. 3 nut			1.25
No. 4 nut			
No. 5 nut			
Screenings	1.15	1.00	.90
2-in. lump			.85
Steam egg			
Mine-run	1.50	1.50	1.40
Washed			1.25
No. 1 nut		2.25	1.85
No. 2 nut		1.75	1.60
No. 3 nut		1.60	1.40
No. 4 pea		1.30	1.25
No. 5 slack		.75	.75

COAL MOVEMENT

Statement of carloads of bituminous coal and beehive coke that originated on 49 railroads in September, compiled by Geological Survey, shows:

Sept.	Aug.	Sept.
1916	1916	1915
Carloads bituminous..	441,256	455,453
Beehive coke (9 roads)	54,664	51,834

September, 1916, showed an increase in shipments of bituminous coal of 0.9% over September, 1915, and a decrease of 3% from August, 1916. Increases in shipments of beehive coke for the same month were 16% and 5% respectively.

NORFOLK & WESTERN

Destination of shipments over this road for August and the first eight months of last year and this year were as follows, in short tons:

Coal	August		Eight Months	
	1915	1916	1915	1916
Tidewater				
Foreign	449,559	396,076	2,634,543	2,412,491
Coa'se	292,244	352,615	2,180,164	2,402,650
Dom'tic	2,299,190	2,332,569	13,874,590	18,232,950
Coke				
Foreign	1,771	1,514	18,450	38,841
Domestic	71,844	158,586	573,436	1,342,389
Total...	3,114,608	3,241,360	19,281,192	24,459,321

General Statistics

MIDDLE WESTERN ROADS

The following is a comparative statement of coal handled by 17 principal Middle Western carriers for the month of June, and the first six months of 1915 and 1916:

	June		6 Months	
	1915	1916	1915	1916
Illinois Central	480,490	544,692	3,445,903	4,423,349
C. & E. I. R.R.	370,284	441,723	2,823,125	3,650,208
C. B. & Q. R.R.	350,527	384,886	2,447,139	3,045,679
C. C. C. & St. L. R.R.	332,940	342,041	2,364,529	2,668,241
Vandalia R.R.	326,268	364,702	2,374,423	2,621,723
C. T. H. & S. E. Ry.	203,071	242,498	1,496,868	1,816,455
C. & A. Ry.	138,619	157,225	909,243	1,241,658
Wabash R.R.	100,412	63,168	755,082	823,932
St. L. I. M. & S. Ry.	116,806	98,573	761,382	722,015
Southern Ry.	77,396	151,163	431,626	955,044
B. O. S. & W. R.R.	57,191	53,495	473,474	371,098
St. L. T. & E. R.R.	35,572	51,462	291,002	368,586
St. L. & O. F. Ry.	47,580	52,164	301,978	342,633
L. & M. Ry.	17,956	28,029	242,973	264,174
C. I. & L. Ry.	61,332	49,392	313,216	360,021
C. P. & St. L. Ry.	26,414	28,989	203,592	258,568
C. & N. W. Ry.	31,787	24,842	205,688	270,086

LAKE SHIPMENTS

Shipments through the Sault Ste. Marie Canals for September and the six months of this year and last year compare as follows:

September	6 Months	
	1915	1916
Coal:		
Hard...	174,560	303,887
Soft...	1,553,436	1,872,078

Foreign Markets

GREAT BRITAIN

Oct. 5—Here and there among non-Admiralty coals there are weak patches, but the general position is maintained, the market being still very bad of good descriptions.

Quotations are approximately as follows:

Best Welsh steam..	Nominal
Best seconds..	Nominal
Seconds...	\$11.25@11.50
Best dry coals..	10.20@10.80
Best Monmouthshires..	11.25@11.50
Seconds...	10.20@10.32
Best Cardif smalls...	7.20@7.80
Cargo smalls.....	5.40@6.00

Freights—The freight market still continues inactive. At east coast ports, where there is a dearth of tonnage big rates may be picked up here and there, but from Wales, as below, rates are still depressed.

Gibraltar.....	\$6.60	Port Said.....	\$14.40
Genoa.....	14.40	Las Palmas.....	6.36
Naples.....	14.40	St. Vincent.....	6.60
Alexandria.....	15.00	River Plate.....	7.20

	Domestic Sizes		Total		Nine Months
	September	1916	1916	1915	1915
Phila. & Reading	898,216	768,165	8,100,395	6,988,436	1,071,303
Lehigh Valley ..	916,367	965,846	7,906,766	8,484,652	1,053,756
Cen. R.R. of N.J.	505,177	498,009	4,377,519	4,635,291	626,237
D. L. & W. R.R.	790,767	688,963	6,604,039	5,696,191	931,610
Dela. & Hud. Co.	455,530	604,821	4,415,662	5,076,386	551,665
Pennsylvania...	414,168	388,801	3,884,016	3,581,878	480,266
Erie R.R.	431,419	595,506	5,005,205	4,889,892	495,631
N. Y., O. & W.	130,010	141,522	1,303,777	1,335,050	175,329
Lehigh & N. E. R.R.	201,749	.....	1,529,741	.....	248,625
	4,743,403	125,540	43,127,120	1,042,891	5,636,160
*Deduction...	62,987	.....	224,509	.....	92,084
Total.....	4,680,416	4,777,173	42,902,611	41,730,667	5,544,076
					5,662,157
					49,930,416
					48,556,940

Coal on hand at Tidewater shipping ports, Sept. 30, 1916, was 367,984 tons as compared with 373,176 tons Aug. 31.

* Deduction: Tonnage reported by both C. R.R. of N. J. and L. & N. E. R.R.